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ABSTRACT

This final report presents a study of 27 classes that participated in a school-to-work initiative that used systematic observation methods combined with teacher and administrative surveys to examine the construct validity of classroom practices related to the integration of academic and occupational curricula for secondary students with and without disabilities. A summary of research methodology and study results is presented first, followed by the full report, which is divided into sections covering methods, results, and discussion. Four appendices describe coding definitions, data collection instruments, and teacher and observer manuals (excluding coding definitions). The measures that were observed included general vocational content; reinforced/fused content blend; coaching instruction strategy; applied student activity; and cooperative instruction grouping. Classes represented academic, vocational, integrated academic/occupational, and special education/academic curricula. Results of the study indicated: (1) teachers and students in integrated classes spent more time engaged in activities represented by the measures than those in academic or special education academic classes; (2) teachers and students in vocational classes also spent more time on these variables, except for coaching, than their counterparts in academic and special education classes; (3) tests of significance based on mean ranks typically demonstrated that integrated curricula or vocational classes could be differentiated from academic or special education classes, except for coaching, as instruction strategies; (4) teacher-research staff interobserver agreement was moderate to low; and (5) teachers reported that the measures and instruments were easy to use and produced useful descriptive information. Appendices include assessment instruments. (Contains 100 references.) (CR)

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Integrated Academic and Occupational Curricula: Identifying Valid Indicators for Secondary Classrooms Serving Students With and Without Disabilities:

Final Report

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Integrated Academic and Occupational Curricula: Identifying Valid Indicators for Secondary Classrooms Serving Students With and Without Disabilities:

Final Report

Recent school-to-work legislation suggests that all students, including those with disabilities, should have access to (a) school-based learning that combines high performance expectations with applied academics, (b) work-based learning that provides work experience, mentoring, and instruction in a broad range of workplace competencies, and (c) school-supported connecting activities, such as business partnerships, that bring students together with employers and postsecondary education institutions. A key principle of this school-to-work model is the integration of academic and occupational learning.

This report (a) identifies central features of integrated curricula in high school classrooms, (b) examines existing research on effects of integrated curricula, (c) summarizes problems with assessing implementation of integrated curricula and (d) presents results of an exploratory study that demonstrated the construct validity of a set of measures related to integrated curricula. Underlying concerns of this inquiry were (a) whether available evidence suggested that integrating academic and occupational curricula is a beneficial option for students with disabilities and (b) to determine how well features of integrated curricula and instruction fit with models of curricula and instruction in special education. A full report is available upon request from the first author. The full report contains a detailed literature review and methodology section for the validation study, along with sample data collection instruments.

Features of Integrated Curricula

The integration of academic and occupational curricula implies changes and enhancements to schools, including: more local control, new resources and departmental changes to support collegial work, teacher training, easy access to knowledge resources, reconsideration of scheduling and tracking practices, a press for achievement, and sustained implementation efforts by key, committed staff (Andrew & Grubb; 1992; Little, 1992; Stasz et al., 1992). Most current school reforms call for similar organizational changes, and in this regard, integration of curricula is comparable to other secondary education reforms. To understand how integrated curricula is similar to, yet distinct from other reforms requires examination of proposals for (a) the organization and content of subject matter, and (b) classroom teaching and learning activities.

As envisioned by practitioners and proponents, integrated curricula puts into place a high school experience that may be described as functional, challenging, and applied (Lankard, 1996). Although, as Grubb (1995) acknowledged, each implementer must answer difficult questions regarding the degree to which different aspects of the contextual, curricular and pedagogical practices will be emphasized, certain central features are evident. First, in an integrated curriculum a student will experience vocational content that emphasizes generic and general work-related skills and knowledge; vocational experiences are neither omitted nor only job-specific. Second, academic and occupational content are blended in a way that draws attention to school and work connections; students work with knowledge of both academic principles and real world practices. Third, students are more often engaged in applied activities that require them to be problem-solvers instead of passive receivers of knowledge. Fourth, teachers spend less time as dispensers of knowledge and more time guiding and supporting student work. Finally, teachers and students are engaged in cooperative activities.

Examination and discussion of the constructs comprising integrated academic/occupational curricula have occurred primarily in the area of regular education (e.g., Plihal, Johnson, Bentley, Morgaine, & Liang, 1992). However, indirect support for some of these features does exist in the special education literature. For example, a content blend approach to high school curricula would make sense for students with disabilities if that meant providing a range of academic, vocational, and other life skills content within an outcome-oriented framework that recognized both postsecondary academics and employment as meaningful goals for many students with disabilities (Benz & Kocchar, 1996). Also, blending academic and occupational courses and programs may facilitate meaningful participation and physical placement of students with disabilities in regular education classrooms by making academics more available and applied (Phelps, 1992). Further, participation in vocational education has been linked to positive employment outcomes for students with disabilities, especially those with mild disabilities (Kohler, 1993; Wagner, 1991). However, the goals, curriculum content, and instructional methods of the vocational courses that related to positive effects have not been systematically assessed. Finally, special education professionals have taken the position that special education must be part of secondary education restructuring efforts, such as integrated curricula (e.g., Benz & Kocchar, 1996), but, there is a need for more information about the compatibility of instructional approaches recommended in conjunction with integrated curricula and the research-based instructional practices recommended by the special education field.

Research on Effects of Integrated Curricula

At this time, the evidence that integrated curricula may benefit students without disabilities is indirect; the greatest support comes from evaluations of comprehensive programs, such as career academies and magnets. These programs seem to promote student achievement and persistence. Empirical evidence of effects for students with disabilities is almost nonexistent. Although model integrated programs for students with disabilities exist, limited generalizable information on outcomes of these programs is available.

Previous reviews

Three recent reviews of the literature on integrated academic/occupational curricula have examined practices or related outcomes (Plihal et al., 1992; Stasz, Kaganoff, & Eden, 1994; Stern,Finkelstein, Stone, Latting, & Dornsife, 1994). Additionally, one reviewer examined studies of contextual learning (Karweit, 1994). Two of these reviews were conducted on behalf of the most recent National Assessment of Vocational Education (Karweit, 1994; Stasz et al., 1994).

Previous reviewers of the literature on integrated academic/occupational curricula have pointed out that most studies inadequately defined interventions, and relatively few provided any empirical evidence of the effects of integrated curricula. Common methodological problems of empirical studies on integration included failure to adequately define program components and dependent variables, limited or no information regarding degree or fidelity of implementation, infrequent use of comparison groups or statistical controls, and limited reporting of basic statistical results. There is some evidence that comprehensive programs such as magnets and academies that have an integrated academic/occupational focus may provide academic benefits to some average and low-achieving students considered to be at risk for dropping out (e.g., Crain, Heebner, & Si, 1992). However, results are inconsistent across program sites and student groups. Studies have not examined postschool outcomes or vocational competencies. To date, studies of contextual learning offer only limited and indirect evidence of benefits of such teaching practices for secondary students.

Descriptive studies

Recent descriptive studies of schools, districts and states have provided additional information regarding important features of policy environment, school context, and classroom pedagogy that support integration of academic and occupational curricula (Bodilly, Ramsey, Stasz, & Eden, 1993; Stasz, et al., 1992). Researchers have identified "exemplary" programs for students with disabilities that incorporate integrated curricula (Matias, Maddy-Bernstein, & Kantenberger, 1995). Additionally, researchers have begun to identify teacher and administrator views regarding potential outcomes of integrated curricula (Finch, Schmidt, & Faulkner, 1994) or have documented program-reports of general outcomes (Matias et al., 1995). Two studies (Matias et al., 1995; Stasz et al., 1992) reported on the participation of students with disabilities in programs or classes that featured content or instructional elements of integrated curricula. Although each of these studies implied that integrated curricula may promote positive student outcomes, none specifically attempted to demonstrate effects. It seems clear that engagement of students with disabilities in classes or programs that provide integrated academic/occupational curricula is possible, but whether integrated curricula may benefit students with disabilities cannot be concluded from these studies.

Program evaluations

Recent evaluations of programs that include an integrated curricula component have ranged from studies of large scale model program replications to evaluations conducted by a teacher-researcher in a single school. These evaluations have provided only limited evidence to support the contention that engagement in integrated curricula leads to benefits for students. The principle reason for this situation is that integrated curricula is typically one component among many in a complex set of interventions within programs, and these programs may be one of many being promoted by reformers. Isolating the effects of integrated curricula has been difficult also because only a few studies have examined the nature or level of implementation (e.g., Stern, Raby, & Dayton, 1992) or have attempted to systematically describe elements of implementation (e.g., Penn, 1992; Raber & Merchlinsky, 1995). Further, as found by previous reviewers, these evaluation reports -- with the exception of the career academy studies (Stern et al., 1992) -- generally failed to provide information regarding the types of data analyses used and basic statistical results needed to evaluate program effects. Information about the effects for students with disabilities is similarly limited. Although at least one (Penn, 1992) included students with disabilities and two other programs (Project Coffee, as reported by Leutheuser, 1994, and the career academies) may have, none of the studies provided sufficient detail to determine the types of disability groups that may have been represented. The Southern Regional Education Board studies (Bottoms, 1995; Bottoms & Presson, 1995) provided interesting baseline data on a large group of students using a national comparison group. Unfortunately, without additional detail regarding methodological aspects of the studies, interpretation of future evaluation results will be difficult. In general, recent program evaluations have suggested that programs with an integrated curricula component may contribute to student persistence, academic achievement, and postsecondary engagement. The benefits of integrated curricula itself are not clear from these studies.

Improving Future Research on Effects and the Problem of Assessing Implementation

Determining effects of integration efforts has not been straightforward for several reasons. Integrating academic and occupational curricula involves changes in both content and pedagogy; multiple classroom features must be defined and measured. Integration may occur within or across courses; units of analysis may be students, classes, groups of classes or schools. Integration may be coupled with other school organizational changes; effects may be confounded by multiple component interventions. Programmatic changes may take several years to fully implement and some student outcomes of interest occur post-graduation; studying effects may require a longitudinal approach. These issues pose methodological challenges for future research on integrated curricula.

Future research on integration of academic and occupational curricula for students with disabilities can strengthen understanding of the processes and effects of integrated curricula by attending to and accounting for the following: (a) participation of special populations, including those with disabilities, (b) clearly defined multiple measures or indicators of program and curriculum components, degree of implementation, and student and organizational outcomes, (c) consideration of measures that reflect the underlying values and causal-models of local implementers and participants, (d) developmental or longitudinal approach to accommodate or control for levels of implementation, and (e) complete reporting of quantitative and qualitative results in multiple formats accessible to practitioners, policy makers and researchers.

A First Step: A Study to Identify Valid Measures of Implementation

Initially, a greater understanding of what happens in classes and schools that integrate academic and occupational curricula is needed. Few of the existing studies on outcomes of integrated curricula also provided information about specific features of implementation. Valid indicators of classroom implementation are needed for (a) investigation of classroom factors associated with positive student outcomes, and (b) exploration of the validity of current conceptual models of curriculum and instruction for secondary students with and without disabilities (Kohler, 1993; McDonnell, Burstein, Ormseth, Catterall, & Moody, 1990; Porter, 1993).

The primary objective of this study was to validate measures of classroom practice that would be sensitive to the level of integration of academic and vocational curricula and that might be applied to a variety of secondary courses including those experienced by students with disabilities. To further examine validity, secondary objectives of the study were to assess (a) reliability of the measures and instruments and (b) relevance of resulting information. If validated, the measures and instruments would be useful in future evaluations regarding implementation of integrated curricula and research on associated outcomes at the student, classroom, school, or district level.

Methods

This study used systematic observation methods combined with teacher and administrative surveys to examine the construct validity of classroom practice measures related to the integration of academic and occupational curricula.

Measures. The measures incorporated features of curriculum and instruction that, in recent school-to-work transition literature (e.g., Adelman, 1989; Grubb, Davis, Lum, Plihal, & Morgaine, 1991; Plihal et al., 1991), have been associated with the construct of integrated academic/occupational curricula: general vocational content, reinforced/fused content blend, coaching instruction strategy, applied student activity, and cooperative instruction grouping. Within the context of this study, these measures wee used to demonstrate the construct of integrated curricula by differentiating four known groups of classes: (a) academic, (b) vocational, (c) integrated academic/occupational, and (d) special education academic. Theoretically, classes that integrated academic and occupational curricula would tend to have higher ranks on these measures.

Sample. The sample included 27 classes from two comprehensive high schools that participated in the Southern Regional Education Board's High Schools That Work initiative. Classes represented academic, vocational, integrated academic/occupational curricula, and special education academic. The classes encompassed a variety of subjects (e.g., mathematics, cosmetology, applied communications), grades (i.e., 9th through 12th), and academic levels (e.g., remedial, honors).

Instruments. The measures of interest were sampled in the four types of classes using multiple instruments. Instruments included: (a) an Administrative Enrollment form; (b) a Course Questionnaire to document teachers' initial estimates of time spent in curriculum and instruction areas represented by the measures; (c) Daily Logs, on which, teachers reported daily class activities and described each activity using coding categories representing the specific measures within each dimension; (d) Observer Logs, which were similar to the Daily Logs, but were completed by research staff, and provided additional contextual detail such as total length of class and number of students present; and (e) Weekly Logs that provided a vehicle for teachers to report anecdotal information. Also, a follow-up survey was used to examine teachers' post-study perceptions of the data collection process and initial outcomes of the study.

Data analysis. The primary focus of data analysis was the construct validity of the measures. Construct validity was first examined using a "known group" strategy with the intent of demonstrating hypothesized differences between groups (Morris, Fitz-Gibbon, & Lindheim, 1987). Kruskal-Wallis nonparametric one-way analysis of variance tests were conducted to determine if teachers and students in integrated curricula classes spent more time on the measures than those in other class types. Construct validity was further examined in a second set of analyses using Kendall's W, a nonparametric test of concordance, to determine the degree to which the different instruments yielded similar rankings of the groups on the summary measures. Additionally, reliability of the instruments and measures was tested. Specifically, Cohen's kappa, which corrects for chance agreement, was used to determine proportion of agreement on coding between teachers and research staff. Finally, the content and social relevance of the dimensions and coding categories were explored using descriptive statistics from the follow-up survey and anecdotal information compiled from teacher-completed Daily and Weekly Logs, incidental conversations with teachers, and informal de-briefing interviews conducted with observers.

Results

The findings provided support for the construct validity of the proposed measures of integrated academic/occupational curricula. Although there was considerable variability among individual classes within class types, the measures differentiated between integrated or vocational classes and traditional academic or special education academic classes. The measures were less sensitive to differences between integrated and vocational classes. These results were demonstrated across multiple instruments.

In this study, integrated academic/occupational classes did in practice provide curricula and instruction that were qualitatively different from traditional academic or special education academic classes. A clear difference was seen in the amount of time students were engaged in hands-on activities and were exposed to both academic and vocational content. Students in integrated curricula classes, according to observers, spent on the average half the classtime in hands-on activities. Almost a third of the classtime was devoted to activities that reinforced or fused academic and vocational content. These applied and blended activities were rarely practiced in the traditional academic or special education academic classes. It is interesting to note that applied activities and blended curricula also were found more often in traditional vocational classes than in traditional or special education academic classes.

Tests of significance based on mean ranks typically demonstrated that vocational or integrated classes could be differentiated from academic or special education classes, except in the area of coaching as instruction strategy. Mediating these results is the fact that teacher-research assistant interobserver agreement was moderate to low, while interobserver agreement among observers was moderate to high. This suggests that the observer logs provided more reliable estimates of observable classroom activity. In fact, findings of significant differences between class types did vary by instrument type.

Teachers in integrated curricula classes spent significantly more time covering general vocational content than those in academic classes, according to the course questionnaire and daily logs. Teachers in integrated and vocational classes spent significantly more time providing reinforced/fused content blend than those in academic classes, according to the daily and observer logs. There were no significant differences between class types on any instrument for

Mean Ranks on Summary Variables

Summary Variable Instrument	Class Types Academic n = 6	 Vocational n = 7	 Integrated n = 7	 Special Education n = 7	
	R	R	R	R	$\chi^2(3)$
General Vocational Content					
Course Questionnaire	6.83	16.36	20.07	11.71	10.16*[a]
Daily Logs	7.50	15.14	19.86	12.57	8.30*
Observer Logs	7.50	13.71	16.86	17.00	6.90
Reinforce/Fused Content Blend					
Course Questionnaire	10.75	16.57	18.00	10.21	5.16
Daily Logs	6.00	19.57	19.43	9.86	14.82*
Observer Logs	7.50	19.14	17.29	11.14	9.05*[a]
Coaching Instruction Strategy					
Course Questionnaire	9.42	20.07	14.43	11.43	6.92
Daily Logs	11.00	15.43	15.50	13.64	1.35
Observer Logs	14.50	11.79	16.57	13.21	2.11
Lab/Applied Student Activity					
Course Questionnaire	8.92	19.50	15.86	8.33	9.86*[a]
Daily Logs	5.00	22.43	15.57	11.71	16.47*
Observer Logs	5.50	19.57	18.79	10.93	13.92*[a]
Cooperative Instruction Grouping					
Course Questionnaire	10.50	18.21	19.43	7.36	11.29*[a]
Daily Logs	11.75	15.79	19.86	8.29	8.30*
Observer Logs	14.00	16.07	16.79	9.14	4.17

[a] Uncorrected value

* Significant at $p \leq 0.05$

Average Percent Time Engaged on Summary Variables

	Class Types							
Summary Variable Instrument	Academic n = 6		Vocational n = 7		Integrated n = 7		Special Education n = 7	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
General Vocational Content								
Course Questionnaire	20.33	(16.81)	57.86	(25.64)	72.14	(22.52)	40.71	(32.33)
Daily Logs	9.46	(20.14)	35.44	(35.34)	60.79	(36.28)	24.52	(21.66)
Observer Logs	0.00	(0.00)	24.02	(40.62)	35.58	(34.16)	20.04	(19.87)
Reinforced/Fused Content Blend								
Course Questionnaire	37.83	(48.29)	74.71	(20.26)	84.14	(11.48)	35.00	(37.52)
Daily Logs	9.46	(20.14)	73.04	(21.76)	69.31	(37.15)	20.27	(20.76)
Observer Logs	0.00	(0.00)	26.54	(16.88)	31.98	(32.78)	3.32	(4.39)
Coaching Instruction Strategy								
Course Questionnaire	16.67	(11.69)	52.86	(26.28)	30.00	(23.63)	22.14	(13.80)
Daily Logs	19.36	(20.38)	30.56	(27.88)	29.37	(15.57)	27.40	(16.39)
Observer Logs	6.88	(11.23)	2.38	(6.30)	11.79	(15.59)	3.81	(6.79)
Lab/Applied Student Activity								
Course Questionnaire	21.67	(32.35)	62.86	(18.23)	52.14	(14.10)	18.67	(24.55)
Daily Logs	11.30	(11.73)	70.02	(17.03)	45.13	(25.01)	29.50	(23.87)
Observer Logs	2.50	(6.12)	55.17	(22.82)	49.44	(28.44)	21.28	(34.03)
Cooperative Instruction Grouping								
Course Questionnaire	25.00	(15.17)	50.86	(25.83)	55.71	(24.91)	16.71	(8.98)
Daily Logs	15.96	(15.11)	30.68	(27.80)	40.48	(27.28)	7.84	(7.09)
Observer Logs	14.50	(9.37)	30.71	(31.02)	30.27	(30.54)	5.34	(7.85)

teachers' use of *coaching instruction strategy*. According to the observer logs, students in both integrated and vocational classes spent significantly more time on *lab/applied student activity* than those in academic classes. The course questionnaire and daily logs also showed this difference between vocational and academic classes, as well as between vocational and special education classes. Finally, students in integrated classes spent significantly more time on *cooperative instruction grouping* than those in special education classes, according to the course questionnaire and daily logs.

Although findings of significance varied by instrument type, there was a strong concordance of rankings among the course questionnaire, daily logs and observer logs on all summary variables except coaching. In other words, classes that received higher rankings on one instrument also were more likely to receive higher rankings on other instruments. Although observers documented less time engaged on summary variables than teachers reported on the daily log, and teachers reported less time engaged on summary variables through the daily logs than they did on the course questionnaires, a consistent pattern of rankings was evident.

Kendall's W (Coefficient of Concordance) for Mean Ranks on Instruments

Summary Variable	χ^{2a}	*W*	*p*
General Vocational Content	61.58	0.79	< 0.001
Reinforced/Fused Content Blend	50.69	0.65	0.003
Coaching Instruction Strategy	26.49	0.34	0.44
Lab/Applied Student Activity	59.75	0.80	< 0.001
Cooperative Instruction Grouping	52.72	0.68	0.001

[a] *df* = 26, except Student Activity dimension *df* = 25

Integrated and vocational classes typically received higher ranks and academic and special education academic classes typically received lower ranks.

Teachers generally supported the belief that differences between class types found through the daily log represented important differences, suggesting some degree of face validity for the measures. Further, teachers expressed support for the idea that collecting classroom information about the measures would be useful for a variety of purposes, such as monitoring how they use classtime to inform their own professional development. Teachers did not view any of the reporting methods as overly intrusive in terms of time required nor disruptive to class activities. Some teachers suggested in their written comments on the weekly logs and follow-up survey that some class activities may not have been well represented by the daily log data because (a) certain activities occur only at certain times in the semester, (b) choosing between codes was difficult for some activities, and (c) some classroom activities focused on personal life skills, which were difficult to code on academic and vocational dimensions.

Implications

This study has two important implications for classroom practice and education policy. First, findings suggest that students may experience different types of curriculum and instruction in integrated curriculum classes than in other more traditional class types. Students, including those with disabilities, who prefer an applied learning approach to academics may find a better match in classrooms that provide integrated academic/occupational curricula. Further, it has been proposed that a potential benefit of integrated curricula classes is that students would not have to choose between academic and applied occupational courses as is often the case in current high school settings (Benz & Kochhar, 1996; Phelps, 1992). This study provides some preliminary support for this belief. However, this study can not address the question of whether the academic content was comparable across class types. It may only be concluded that students in this study were more likely to experience both academic and vocational content in integrated and vocational classes.

Second, valid measures of integrated curricula have important uses for program evaluation. The measures may be used to monitor implementation of integrated curricula for purposes of program development in schools that adopt an integrated curricula approach. The measures and instruments in this study would support schools' self-assessments and dialogues with parents and other stakeholders regarding the goals and methods used in school programs. This type of information would fit into a model-guided method of program implementation monitoring (Brekke, 1987). In this type of monitoring, data are collected that reflect the underlying purposes or theories of program operation. These data are then used systematically by school personnel and stakeholders to inform or refine existing programs. As part of a system of school-level indicators these types of measures are a way to purposefully shape improvement efforts at multiple system levels (Levesque, Bradby, & Rossi, 1996).

Also, the measures may be used to assess the relation between implementation of integrated curricula components in the classroom and student outcomes such as achievement in content areas, school engagement and graduation, and postschool success in employment and postsecondary education. Most evaluation studies of programs involving integrated curricula have typically ignored levels of implementation in the classroom and have, therefore, failed to provide convincing evidence of the impact of integrated curricula. This lack of information makes it difficult for practitioners in regular and special education to judge the value of an integrated curricula approach for students with and without disabilities. This study begins to address this problem by identifying measures that could be used to examine the link between what actually happens in integrated curricula classrooms and student outcomes, such as academic achievement. At the school or classroom level, these measures could be used to document degree of implementation. This information would provide greater insight into the results of evaluations purporting to show different outcomes for different class types.

Limitations

This study must be considered an exploratory study. The sample was chosen to permit discrimination between class types within a comprehensive school setting. The sample was not intended to be representative of other classes or schools. The results related to actual time engaged on the summary variables by different class types should not be considered representative of academic, vocational, integrated or special education academic classes in other schools. The measures were not designed to suggest that spending a specific amount of time on particular areas of curriculum and instruction would make a class "integrated." In fact, there was considerable variability among individual classes within class types. Also, the measures did not identify significant differences between vocational and integrated classes. This may be a result of limited implementation in the sample schools, poor reliability, or that the five dimensions and their categories were not sufficiently defined to differentiate between the two class types. It is important to note that in situations where teachers might be held accountable for their performance on the measures, the data would be subject to further bias and would be considered less reliable than in this study.

A further limitation of the study is that, although the measures were based on the available literature, the definitions used may not address areas of concern in other schools. For example, there was no attempt in this study to examine the depth or breadth of academic topics available in the classes. Also, the special education students in this study participated in self-contained academic classes or were mainstreamed in regular education classes. They were typically students with mild to moderate mental retardation or learning disabilities. If classes serving students with other types of disabilities (e.g., behavior disorders) or classes arranged in other ways (e.g., special education self-contained vocational) had been included in the study, participants might have identified other dimensions of curriculum and instruction that should be considered as relating to integrated curricula. Similarly, another limitation of this study is that only school-based classrooms were examined. Classes that were based in the community or work settings may have important features that were not considered in relation to the measures tested in this study.

Future Research on Measures and Implementation of Integrated Curricula

Based on these implications and limitations, four areas for future research on integrated curricula are suggested.

Further examine validity and reliability. First, the validity of the measures should be further assessed in other schools, in both school- and community-based classes, and with other types of students with disabilities. Second, additional measures should be included that would help to extend and refine the definition of integrated curricula. These additional measures should systematically document: (a) blending of other functional contexts (e.g., life skills) with academics, and (b) academic content and skill level of activities. Seeking expert consensus on these measures would further enhance their validity. Finally, variability within class types might be reduced by creating larger samples from similar academic content areas (e.g., mathematics).

Program evaluation. A fundamental issue is to determine to what degree components of integrated curricula must be present to create meaningful differences in student outcomes and the types of outcomes that should be documented. Second, the degree to which teachers must make the connections between academic and vocational content areas explicit for students in order to demonstrate relevance is not clear. Third, features of integrated curricula as they exist in context at different schools and programs must be documented. Also, it may be useful to further develop the course questionnaire to provide an efficient and accurate representation of classroom activities.

Students with disabilities. First, researchers must consider that lifeskills as well as vocational content may provide students with and without disabilities alternate and equally productive contexts for learning academic material. Second, the concept of high academic expectations for secondary students with cognitive disabilities must be examined, especially in regard to adequately defining integrated curricula. Third, the contention that a general vocational content approach is best must be examined in light of the special education literature support for students with severe disabilities to have specific skill training accompanied by generalization to multiple environments. Finally, researchers should investigate the supports needed and delivered to facilitate participation of students with disabilities in integrated curricula classes.

Personnel preparation. In this study, teachers from academic backgrounds were able to implement curricula and instruction such that their classes looked similar to vocational classes on the measures of interest. This finding raises questions regarding the type of personnel preparation needed to successfully implement integrated curricula.

Conclusion

This study explored in a systematic manner important aspects of curriculum and instruction in secondary classrooms and how these relate to the construct of integrated academic/occupational curricula found in the literature. As a result of this study, (a) the construct of integrated curricula was shown to be observable and measurable, (b) features of current conceptual models of integrated curricula were shown to have validity in a variety of classrooms, (c) important limitations of the integrated curricula construct were identified, (d) the reliability of teacher reports was assessed, and (e) teachers' assessments of the relevance of the resulting information were explored.

Such implementation information is needed to determine if integrated curricula, a major component of current school-to-work transition initiatives, is, in fact, beneficial for all students. The School-to-Work Opportunities Act, the Perkins Act Amendments and Individuals with Disabilities Education Act Amendments of 1990 have created an opportunity to put in place a comprehensive school-to-work system that creates high academic expectations and promotes positive student outcomes for all students. To achieve this goal, more information is needed by policymakers and practitioners about classroom-level implementation of school-to-work activities and how these activities address the individual educational needs of students with disabilities. This study addressed this need in two important ways: (a) completion of a methodological component of indicator development that is generally not possible for school practitioners and administrators to undertake, and (b) demonstration of the feasibility of using observable classroom practice measures to describe integration of academic and occupational curricula.

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INTEGRATED ACADEMIC AND OCCUPATIONAL CURRICULA: IDENTIFYING VALID INDICATORS FOR SECONDARY CLASSROOMS SERVING STUDENTS WITH AND WITHOUT DISABILITIES

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ABSTRACT

The purpose of this study was to explore the validity of a set of observable measures representing integrated academic/occupational curricula in high school classrooms. These measures incorporated features of curriculum and instruction that, in recent school-to-work transition literature, have been associated with the construct of integrated academic/occupational curricula: general vocational content, reinforced/fused content blend, coaching instruction strategy, applied student activity, and cooperative instruction grouping. The sample included 27 classes from two comprehensive high schools. Classes represented academic, vocational, integrated academic/occupational curricula, and special education academic. Teachers completed a course questionnaire and daily logs that described classroom activities using the measures. Research staff conducted classroom observations.

Of particular interest was whether the measures would reflect significant differences between class types and whether these differences could be observed across multiple instruments. Theoretically, integrated curricula classes would have higher mean ranks on the measures than would other class types. Data analyses included non-parametric tests for analyses of variance and concordance. Kappa tests were used to analyze interobserver agreement. The content and social relevance of the measures were explored using descriptive statistics from a follow-up survey and anecdotal information.

All instruments showed that, on the average, teachers and students in integrated classes spent more time engaged in activities represented by the measures than those in academic or special education academic classes. Teachers and students in vocational classes also spent more time on these variables, except for coaching as reported by observer logs, than their counterparts in academic and special education classes. Tests of significance based on mean ranks typically demonstrated that integrated curricula or vocational classes could be differentiated from academic or special education classes, except for coaching as instruction strategy. Teacher-research staff interobserver agreement was moderate to low; interobserver agreement among observers was moderate to high. Teachers reported that the measures and instruments were easy to use and produced useful descriptive information. The discussion addresses limitations of the measures and the study, implications for classroom and school practice, and suggestions for future research.

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CHAPTER I

INTRODUCTION

School-to-Work for All Students

The transition from school to postsecondary adult life is critical for adolescents with and without disabilities (Benz & Kochhar, 1996; Halpern, 1994). During this time, students make decisions regarding school completion, postsecondary education, career interests, and employment options. Ideally, secondary education experiences will provide supportive opportunities for students to engage in high quality instructional programs relevant to postsecondary options, explore their interests and preferences, engage in community-based learning activities, and establish connections with businesses, postsecondary institutions, and community agencies (Benz & Kochhar, 1996; Halpern, 1994; Kazis, 1993; Kohler, 1993; Winters, 1993). Current federal legislation affecting regular and special education emphasizes the importance of school-to-work transition activities to promote positive adult outcomes for students with and without disabilities (Individuals with Disabilities Education Act [IDEA], 1992; School-to-Work Opportunities Act [STWOA], 1994).

According to the School-to-Work legislation (1994) all students will benefit from exposure to (a) school-based learning that combines high performance expectations with applied academics, (b) work-based learning that provides work experience, mentoring, and instruction in a broad range of workplace competencies, and (c) school-supported connecting activities, such as business partnerships, that bring students together with employers and postsecondary education institutions.

In regard to this model, there is discussion in both the regular and special education fields regarding the nature of secondary curriculum and instruction within a school-to-work system. The issue of curriculum and instruction arises from concerns voiced by both special educators and regular educators that some students (e.g., students with and without disabilities who participate in the general track) receive less rigorous and lower-quality instruction (Edgar & Polloway, 1994; McDonnell, 1989). There is concern that these students are prepared neither for college or work (National Education Goals Panel, 1995).

This study examines a key principle of the school-to-work model related to curriculum and instruction -- the integration of academic and occupational learning -- as it applies to both students with and without disabilities. This study also presents a set of measures and instruments for assessing implementation of central features of integrated curricula within a broad range of classroom settings.

Historical and Current Interest in Integrated Curricula

All students, including those with disabilities, should participate in secondary education programs that integrate academic and occupational curricula. This proposition has been a central feature of prominent secondary education reforms in the last ten years. The Carl D. Perkins Act (1990), the major federal funding vehicle for vocational education in the United States, and the School-to-Work Opportunities Act (1994), a key piece of the federal systemic education reform agenda, both promote the principle of integrating academic and occupational education as a cornerstone of vocational programs and school-to-work systems. Both require that students with disabilities have access to these activities.

The current interest in integrating academic and occupational education can be viewed as a resurgence of an idea that failed to take hold across almost one hundred years of secondary education philosophy and practice. At its inception at the turn of the century, the structure of publicly-funded vocational education was heatedly debated by unusual alliances of educators, federal and state governments, business leaders, economists, and social reformers (Kantor & Tyack, 1982). Two primary camps emerged. On one side were those who favored an efficient mechanism of separate schools that would train students for their probable futures as entry-level workers in specific occupations within industry, commercial enterprises, agriculture, or the home (Grubb, Davis, Lum, Plihal, & Morgaine, 1991; Kantor & Tyack, 1982). This style of vocational education was seen as a positive solution to the steadily growing population of immigrants and the poor, who were seeking a public education, but were deemed not likely to pursue vocations requiring college preparation. On the other side of the debate were those who believed that a broad-based, applied academic curriculum would best prepare all students as citizens in a democracy (Boesel, Rahn, & Deich, 1994; Grubb et al., 1991; Kantor & Tyack, 1982).

The Smith-Hughes Act of 1917 formally and firmly established a system of vocational education as envisioned by the proponents of occupationally-specific high school training for non-college bound students (Berkell & Gaylord-Ross, 1989; Kantor & Tyack, 1982). However, as early as the 1930s, the structure of vocational education came under attack from social reformers and policy makers. The Russell Report of 1938 criticized the narrow focus of vocational education and urged adoption of a more flexible curriculum (Grubb et al., 1991; Kantor & Tyack, 1982). Federal initiatives in the 1960s and 1970s, including the 1963 Vocational Education Act, also suggested that vocational education was overly narrow in scope and had become associated with limited educational opportunities and low-status occupations. Federal attempts to promote a broader approach to vocational training and to encourage the integration of vocational and academic curriculum failed to move the established system (Grubb et al., 1991; Kantor & Tyack, 1982).

Gray (1994) argued that despite the enduring nature of vocational education as an institution, there have been important shifts during its history. These shifts occurred as a result of gradual changes in parents' and students' beliefs about available and financially-rewarding occupations. At its inception and for several decades, parents and students supported the basic vocational programs in industry, agriculture, home economics, and commercial education because such training matched their perceptions of post-high school job opportunities. However, as parents and students saw these types of jobs become less available and desirable, more students began to sample a variety of courses that broadly fit into high school graduation requirements, but were not necessarily focused on a specific career. By the 1980s, a college-degree was perceived as the best way to have a better financial future, and more students took academic course work to gain the credits necessary for college entry. For many students, this often meant an incoherent series of general curriculum courses that failed to prepare them adequately for work or college (Barton, 1990; Gray, 1994; Kazis, 1993; Plihal, Johnson, Bentley, Morgaine, & Liang, 1992). Recently, programs that offer students both technical and academic skills again have been offered as a solution to this problem.

Current Rationales for Integration of Academic and Occupational Curricula

Integration of academic and occupational instruction has gained renewed attention because, as in previous years, it is a key component of federal school-to-work initiatives. Additionally, a variety of interest groups perceives that such curricular integration supports and is supported by other current education reform efforts, such as teacher professionalization, schools of choice, accountability, restructuring, and teaching reforms that emphasize challenging material, problem-solving, and cognitive skills (Andrew & Grubb, 1992; Boesel & McFarland, 1994; Grubb et al., 1991; Hoachlander, 1994; Little, 1992; Stern, Finkelstein, Stone, Latting, &

Dornsife, 1994). Thus, although integration is largely an effort to improve the quality of vocational education, it has become a centerpiece of many secondary education reforms.

Several rationales for integrating academic and occupational curricula have been advanced. First, some critics of secondary high school curricula suggest that a general secondary education is not functional in design nor is it perceived as relevant by students (Grubb et al., 1991). Proponents of integrated curricula argue that applied, competency-based courses that incorporate challenging academic material inherently would be more relevant and interesting to students. Because students would use real-world materials to solve problems in context, they would be more likely to understand the connections between abstract academic concepts and real-world work (Lankard, 1996).

Second, there is concern that exposure to traditional vocational or general academic curricula alone does not sufficiently promote student academic skills and employment outcomes. Bodilly, Ramsey, Stasz, and Eden (1993) found in their case studies of schools that were early implementers of integrated curricula that many of these schools hoped to enhance students' academic skills by infusing more academic learning into vocational courses. This belief that integrated curricula will promote student achievement has its basis in cognitive research that suggests applied instruction is a powerful tool to improve student attitude and engagement and to encourage independent problem-solving (Bodilly, et al., 1993; Grubb et al., 1991; Kerka, 1986; Little, 1992).

Third, it has been suggested that the workplace is shifting from an emphasis on mass-production work to "high performance" work, which means that workplaces and job duties will undergo frequent changes and lower level workers may have increased responsibilities (Bailey, 1995). Although there is debate as to the rapidity and pervasiveness of this shift, proponents of

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integrated curricula argue that both business and students benefit when students are taught to employ independent problem-solving, become familiar with workplace contexts, and are exposed to current technologies and business practices (Bailey, 1995; Lankard, 1996).

Fourth, Bodilly et al. (1993) found that the desire to eliminate tracking was another motivating factor for schools that had adopted integrated curricula approaches. Critics of tracking and stratified curricula believe the split between vocational and academic programs contributes to unequal educational access and outcomes (Little, 1992; Oakes, Selvin, Karoly, & Guiton, 1992; Plihal et al., 1992). It is important to note that the predominant equity argument centers on eliminating the educational program divisions between college-bound and non-college-bound students. However, the equity rationale also encompasses assurances of access to programs by students with disabilities and other special populations.

Students with Disabilities: Access to Integrated Curricula

A policy overlap between the IDEA (1992), the Perkins Act (1990), and the School-to-Work Opportunities Act (1994) has emerged that emphasizes equity in secondary programs for students with disabilities (Moore & Waldman, 1994). The Perkins Act (1990) requires that students with disabilities and other special populations have access to vocational programs, and a central feature of these programs under the Perkins Act amendments is the integration of academic and occupational curricula.

Prior to the passage of the Vocational Education Act of 1963, few vocational education programs for students with disabilities existed (Wagner, 1991). The 1963 Act and its 1968 amendments that established funding specifically for special populations increased opportunities for students with disabilities to participate in secondary vocational education (Phelps & Wermuth, 1992; Wagner, 1991). Currently, the 1992 Carl D. Perkins Vocational Education Act

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regulations require that regular vocational education programs support special education transition initiatives (National Transition Network, 1993). Even though funding set aside specifically for special populations has been replaced by targeted funding for localities with high concentrations of special needs groups, vocational education administrators continue to devote funds to promote involvement of special populations, including students with disabilities, in regular vocational education programs (Boesel & McFarland, 1994; Hudson, 1994).

Like non-college bound regular education students, young adults leaving special education experience problematic outcomes, but to a greater degree than their peers without disabilities (Gaylord-Ross, Halloran, & Siegel, 1993; Hasazi, Johnson, Hasazi, Gordon, & Hull, 1989; Johnson & Rusch, 1993; Wagner, Newman, D'Amico, & Jay, 1991). In addition to providing access to vocational education for students with disabilities, policy makers and practitioners concerned with the post-school outcomes of young adults with disabilities have implemented a variety of legislative initiatives and programs to facilitate adolescents' transition from special education programs into adult work settings (Halpern, 1994; Stodden & Leake, 1994). The Individuals with Disabilities Education Act (IDEA) was amended in 1990 to include a mandate for individualized transition services for students with disabilities. This action built on earlier federal systems change efforts, and resulted in renewed efforts at the local and state levels to promote positive student outcomes (Gaylord-Ross et al., 1993; Wehman, 1992). Regular vocational education for students with disabilities has received additional support from least restrictive environment and transition provisions in the Individuals with Disabilities Education Act and from the Vocational Rehabilitation Act (Wagner, 1991). The work-related goals of regular vocational education are compatible with those articulated in the special education literature and legislation (Cobb & Neubert, 1992), and vocational training is frequently cited as a "best practice" in special education (Kohler, 1993).

Boesel, Hudson, Deich, & Masten (1994) noted that despite issues of limited access in some areas, special populations are over-represented in vocational programs. Although the number of students taking vocational education courses declined in the late 1980s (partially in response to increased state and district demands for more academic course-taking) there was no change in the vocational course-taking of students with disabilities. Students classified as special populations earned more vocational credits and tended to complete sequences of vocational courses. However, they took courses in the less technical areas of agriculture, occupational home economics, and trades. There were relatively few students from special populations in business, marketing, health, and technical education. This pattern was clear for students with disabilities.

Although equal access by special populations to vocational programs has been a major outcome focus in the past, over-representation of students with disabilities in vocational education training that is less in demand in emerging labor markets suggests a different focus may be needed. The National Assessment of Vocational Education recommended that future reform efforts must improve the quality of occupational programs for special populations and provide assistance for the development and use of performance measurement systems that will adequately assess the impact of such programs (Boesel & McFarland, 1994; Hudson, 1994).

It is at this juncture of program equity and program improvement, fueled by a variety of interests in regular and special education, that questions about the nature of integrated academic and occupational curricula for students with disabilities must be asked. Fundamentally, what is “integrated curricula” ? What benefits accrue to those who participate in integrated curricula?

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Does evidence exist to suggest that exposure to integrated curricula is equally beneficial for students with and without disabilities?

Models and Components of Integrated Curricula

Much has been written about integrating academic and occupational curricula within the last several years, primarily from a conceptual or best practices point of view. Plihal et al. (1992) found more than 90 descriptions of integrated academic/occupational curricula in elementary, secondary, and postsecondary education published before 1990; most within the preceding five years. Stasz, Kaganoff, and Eden (1994), in their search for empirical studies on integrated curricula, found slightly more than 100 publications - few of which were empirical - for the period between 1987 to mid-1992. In general, these reviews found substantial amounts of activity and interest, but not much clarity about purposes, practices, or outcomes for integration (Stasz et al., 1994).

Organizational Contexts for Integration

This diffuse effort may be a result of the fact that integration has been advocated and adopted by several different education reform movements (Andrew & Grubb, 1992; Lankard, 1996; Little, 1992) and involves a variety of changes at the organization level as well as changes in teaching and learning practices. It is not a single, well-defined intervention, but instead constitutes a package of changes in a school's social context and pedagogical practices that may be modified to fit the needs and interests of the implementers. At the organizational level, integration implies changes and enhancements to schools, including: more local control, new resources and departmental changes to support collegial work, teacher training, easy access to knowledge resources, reconsideration of scheduling and tracking practices, a press for achievement, and sustained implementation efforts by key, committed staff (Andrew & Grubb;

1992; Little, 1992; Stasz et al., 1992). Most current school reforms call for similar organizational changes, and in this regard, integration of curricula is comparable to other secondary education reforms. To further understand how integrated curricula is similar to, yet distinct from other reforms requires examination of proposals for (a) the organization and content of subject matter, and (b) classroom teaching and learning activities.

Content blend: What is taught?

Because of the entrenched content area focus of most high schools, subject matter is the primary organizing principle of current attempts to integrate curricula (Little, 1992). Typically, integration of academic and occupational curricula focuses on blending together traditional disciplinary subject matter. The "academics" most often refers to the college preparatory curriculum, especially math, science, English, and history (Plihal et al. 1992). "Vocational" means those courses that schools offer to prepare students for entry into specific jobs or to develop workplace attitudes (Gray, 1994; Plihal et al., 1992).

Curricular integration is often described as being "horizontal" or "vertical" (Grubb et al., 1991; Plihal et al., 1992). Horizontal alignment refers to integration across one level of the curriculum. For example, an academic and a vocational course may be linked together by overlapping or reinforcing material presented in each, using a common theme to guide content selection, or developing a new "fused" course that merges subject matter of the original courses (Andrew & Grubb, 1995; Plihal et al., 1992). Vertical alignment refers to course sequencing, usually across several disciplines or within a newly defined "broad fields" area (Grubb et al., 1991; Plihal et al., 1992). Both types of curriculum integration have been observed in recently implemented models. Based on field studies of emerging programs, Grubb et al. (1991) identified eight implemented models of integrated curricula. Reid and Tsuzuki (1994), in their

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national review of local practice, provided examples of school changes and classroom activities for each of Grubb et al.'s eight implemented models. These models range from teacher adaptations of one course's content to complex whole-school organizational reforms such as occupational magnets, in which all students engage in a sequence of courses within one or more occupational areas.

Although comprehensive models such as career academies and occupational magnets exist, typical integration efforts have been on a smaller scale (Boesel, Hudson et al., 1994). The most prevalent types of integration to date are those that (a) incorporate basic academic skills into industrial-trade vocational classes or (b) replace general English, science and math courses with locally-adapted versions of curricula packages that infuse vocational material into academic content, such as Applied Communication, Principles of Technology, and Math for Technology (Boesel, Rahn et al., 1994; Lankard 1996; Plihal et al., 1992). Rarely in practice does integration also include issues of family or personal development, although this has been recommended (Copa, 1994). Most of these initial integration efforts are limited in two ways. Ideally, subject matter of integrated curricula encompasses (a) vocational content that is less job-specific, and (b) challenging academic content acquired through application.

Expanding the vocational content domain. The traditional job-specific conception of vocational education is changing to the broader view of educating students through an "industry-related" or "occupational clusters" approach (Hoachlander, 1994). In this view, high school is considered an occupation-related endeavor for all students. The function of the high school curriculum is to prepare students for entry into their chosen vocation, whether that means graduating directly to the job market or continuing their education and training at the postsecondary level before entering into a profession. Further, most vocational students do not obtain a job in the field for which they trained (Boesel, Rahn et al., 1994). Therefore, proponents of integrated curricula suggest that in addition to, and typically before, learning job-specific skills students should develop "generic" skills and broad "industry-relevant" knowledge and skills; a process that may begin prior to high school (Bailey, 1995; Berryman, 1995; Boesel, Rahn et al., 1994; Copa, 1994; Grubb et al., 1991; Hoachlander, 1995; Plihal et al., 1992; STWOA, 1994).

Generic skills include (a) basic skills such as reading, simple math, life skills, and prosocial behavior, (b) formal and informal complex reasoning skills, and c) work-related skills and attitudes such as self-management, cooperative skills, and "habits of thought" (Stasz et al., 1992; Stasz, Ramsey, & Eden, 1995). These generic skills are similar to the "foundation skills" - basic skills, thinking skills, and personal qualities - proposed in the U.S. Department of Labor SCANS report (1991) that has been widely supported by industry and many vocational educators (Lankard, 1995).

Industry-relevant knowledge and skills address a wide-range of content using a particular industry (e.g., transportation) as a specific context. Students acquiring industry-relevant knowledge might cover: structure and organization, history, technology, economics, human resources, public policy, health and safety, and environmental impact (Hoachlander, 1995). Typically, an emphasis on job-specific competencies would occur following exposure to generic and industry-relevant skills in both the classroom and community.

Acquiring challenging content through application. Boesel, Rahn et al., (1994) suggest that redefining and blending content alone is not sufficient; good student outcomes are dependent upon developing general cognitive ability as well as acquiring relevant basic skills and occupational knowledge. In studies of academic course-taking, cognitive skill and post-

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school outcomes, cognitive skill appears to be related to positive post-school outcomes for students who do not proceed to college (Boesel, Rahn et al., 1994; Gamoran, 1995). Integrating academic and occupational curricula is seen as a way to emphasize the importance of cognitive skill development and to expose more students to challenging academic content (Boesel, Rahn et al., 1994; Plihal et al., 1992).

Proponents suggest that embedding abstract academic concepts into real-world applications would enable students to encounter and utilize information that was not previously available to them in the traditional hierarchical arrangement of decontextualized academic courses (Andrew & Grubb, 1992; Bailey, 1995; Bodilly et al., 1993; Bottoms, Presson, & Johnson, 1992; Stern et al., 1994). This concept of "applied learning" implies (a) connections between "school" work and "real" work are made explicit causing school learning to become more meaningful to more students, (b) problem-solving skills are regularly put into practice, and (c) symbolic or abstract theory is made accessible through "hands-on" projects that use real world materials. In a fully integrated curriculum, students would be required to use both principles and practices, rather than relying on the rote learning that is typically required in high school courses (Bailey, 1995; Berryman, 1995; Boesel, Hudson et al., 1994; Bottoms et al., 1992; Karweit, 1994; Plihal et al., 1992; Stern et al., 1994).

Teaching and Learning: How is it Taught?

These changes to the subject matter of high school curricula suggest changes to teaching and learning activities within classrooms. Typically, efforts to promote the integration of academic and occupational curricula are tightly coupled with calls for pedagogical reform. Generally, teaching and learning are expected to be more activity-based and student-centered (Andrew & Grubb, 1992; Bailey, 1995; Bodilly et al., 1993; Plihal et al., 1992; Stasz et al, 1992;

1995). To support this approach, the literature on integrated curricula often references cognitive science principles of ideal learning environments and the idea of "cognitive apprenticeships" (Berryman, 1995; Grubb, 1995; Karweit, 1994; Stasz et al., 1992; 1995).

These principles were summarized by Collins, Brown, and Newman (1989) in their examination of three models of cognitive apprenticeship that promoted students' academic achievement. In these models, skills and knowledge were taught in the context of meaningful tasks. Teachers used modeling, coaching, and fading as instructional strategies. Thinking and problem-solving skills were externalized by teachers to permit student observation of experts and other learners and to facilitate students' self-correction. Students learned global skills before specific skills. The learning environments featured elements of cooperation and competition.

Similar principles were identified also by Brophy & Alleman (1991) in a literature review supporting their conceptual analysis of learning activities. They suggested that ideal learning activities have goal relevance, appropriate level of difficulty and high motivational value, incorporate multiple goals, address higher-order thinking and life applications, and require students to connect declarative knowledge with procedural knowledge. Teachers implemented these activities by introducing and scaffolding content, supporting independent student work, and providing opportunities for debriefing, reflection, assessment, and feedback.

Stasz et al. (1992, 1995), based on their qualitative studies of classrooms, believed that classes resembling this type of "ideal" learning environment would support the acquisition of generic and integrated academic/occupational knowledge and skills. They described successful classrooms as incorporating the following elements: (a) "situated learning," learning in context using real world applications that require both subject-specific and generic skills; (b) a "culture of practice," in which students learn how experts solve problems; (c) intrinsic and extrinsic "motivation" as reported by students and teachers, and (d) "cooperation," observable as self-managing groups, students acting as consultants to other students, and frequent role changes between assistant and learner.

Stasz et al. (1992) noted that in these classrooms teachers became more like coaches, guides, or masters working with apprentices, and made limited use of lecturing or teacher-directed discussions. The teachers often engaged in teaching that made use of unplanned, naturally occurring events and provided one-to-one tutoring by circulating and visiting groups, focusing on students who needed assistance. Parallels between these elements of "integrated pedagogy" and the workplace have been suggested. For instance, successful workers often learn in context, use problem-solving skills, engage in independent, active learning across fields, and must function cooperatively with others or as members of teams (Bailey, 1995; Brown, Collins, & Duguid, 1989).

Central Features of Integrated Curricula

As envisioned by practitioners and proponents, integrated curricula puts into place a high school experience that may be described as functional, challenging, and applied (Lankard, 1996). Although, as Grubb (1995) acknowledged, each implementer must answer difficult questions regarding the degree to which different aspects of the contextual, curricular and pedagogical practices will be emphasized, certain central features are evident. First, in an integrated curriculum a student will experience vocational content that emphasizes generic and general work-related skills and knowledge; vocational experiences are neither omitted nor only job-specific. Second, academic and occupational content are blended in a way that draws attention to school and work connections; students work with knowledge of both academic principles and real world practices. Third, students are more often engaged in applied activities

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that require them to be problem-solvers instead of passive receivers of knowledge. Fourth, teachers spend less time as dispensers of knowledge and more time guiding and supporting student work. Finally, teachers and students are engaged in cooperative activities.

Features of Integrated Curricula and Special Education

Examination and discussion of the constructs comprising integrated academic/occupational curricula have occurred primarily in the area of regular education (e.g., Plihal et al., 1992). However, indirect support for some of these features exists in the special education literature. Wagner (1991) reported that participation in vocational education is related to positive employment outcomes for students with disabilities, especially those with mild disabilities. Students with disabilities who took vocational courses in high school were more likely to get employment, and if they took four or more vocational credits, they also improved their earnings. Other studies have substantiated that students with disabilities who participated in vocational education during high school had more positive postschool outcomes when compared to students with disabilities who had not taken vocational courses (Kohler, 1993). However, the goals, curriculum content, and instructional methods of the vocational courses that related to positive effects have not been systematically assessed. It is not clear whether a broad occupational, skills cluster approach has a greater impact than a narrower job-specific skills training approach. Support for both approaches exists (Kohler, 1994; Wagner, 1991).

Generally, the special education literature suggests that secondary students with disabilities should have access to "functional", individualized curricula that address academic, vocational, social, and independent living skills (Cipani & Spooner, 1994; Clark, Field, Patton, Brolin, & Sitlington, 1994; Edgar & Polloway, 1994; Falvey, 1989; Halpern, 1994; Kohler, DeStefano, Wermuth, Grayson, & McGinty, 1994; Smith & Puccini, 1995). Functional curricula are "outcome-oriented", addressing skills a student needs in his or her current, next, and future environments (Fredericks & Brodsky, 1994). A key issue is that individualization of the curriculum is a function of both the student's disability and personal goals. Students with disabilities are an extremely varied group. Disabilities may be mild or severe; cognitive or physical; require modest accommodation or intensive supports. Students' postsecondary goals may address college education, employment, residential options, and community participation. Depending upon these student characteristics and goals, a "functional" curricula may contain more or less academic content delivered in a variety of ways.

For some students, the academic content of the general curriculum is not functional, and teaching "basic" academic skills in the context of critical independent living and specific employment skills may be reasonable and relevant. A content blend approach to high school curricula makes sense for students with disabilities if that means providing a range of academic, vocational, and other life skills content within an outcome-oriented framework that recognizes both postsecondary academics and employment as meaningful goals for many students with disabilities. Also, blending academic and occupational courses and programs may facilitate meaningful participation and physical placement of students with disabilities in regular education classrooms by making academics more available and applied (Phelps, 1992).

A strength of the special education field is its research-based development and implementation of instructional modifications to meet the needs of diverse learners (Cipani & Spooner, 1994; Edgar & Polloway, 1994; Pugach & Warger, 1993). Instructional support models, such as teaching learning strategies, tutoring, cooperative learning, and collaborative teaching, are typical instructional strategies for students with mild disabilities in secondary education (Edgar & Polloway, 1994). For students with severe disabilities, systematic data-based instruction characterized by frequent opportunities to learn, fading of behavioral interventions, use of natural cues, and training for generalization is considered best practice (Falvey, 1989). Within special education practice, a variety of instructional strategies must be employed to meet the wide-ranging needs of students with disabilities. There is a need to explore the different types of instructional strategies and supports that promote productive engagement of students with different disabilities in applied academic courses.

In general, special education professionals have taken the position that special education must be part of secondary education restructuring and can best do so by advocating for improvements to and expansion of curriculum and transition services on behalf of all students (Benz & Kochhar, 1996; Halpern, 1994; Polloway, Patton, Epstein, & Smith, 1989; Patton et al., 1996). Patton et al. (1996) suggested that expansion of curricular options in regular education, especially in the areas of vocational and life skills, is necessary. Otherwise, efforts to promote inclusion will result in placements in regular education classes that are nonfunctional for many students with disabilities. Additionally, Bodilly et al. (1993) suggested that integrated curricula may improve school transition for regular education students because successful academic/occupational integration requires using planning partners, developing a transition-specific curricula, examination of transition services, and enhancing teaching credentials and certification. This suggests that an ancillary system-level outcome of integrating curricula in regular education could be the enhancement of existing transition services for students with disabilities that have become a mandate for practice through the IDEA.

Previous Research on Effects of Integrated Curricula

At this time, the evidence that integrated curricula may benefit students without disabilities is indirect; the greatest support comes from evaluations of comprehensive programs,

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such as career academies and magnets. These programs seem to promote student achievement and persistence. Empirical evidence of effects for students with disabilities is almost nonexistent. Although model integrated programs for students with disabilities exist, limited generalizable information on outcomes of these programs is available.

Three recent reviews of the literature on integrated academic/occupational curricula have examined practices or related outcomes (Plihal et al., 1992; Stasz et al., 1994; Stern et al., 1994). Additionally, one reviewer examined studies of contextual learning (Karweit, 1994). Two of these reviews were conducted on behalf of the most recent National Assessment of Vocational Education (Karweit, 1994; Stasz et al., 1994).

Previous reviewers of the literature on integrated academic/occupational curricula have pointed out that most studies inadequately defined interventions, and relatively few provided any empirical evidence of the effects of integrated curricula. Common methodological problems of empirical studies on integration included failure to adequately define program components and dependent variables, limited or no information regarding degree or fidelity of implementation, infrequent use of comparison groups or statistical controls, and limited reporting of basic statistical results. There is some evidence that comprehensive programs such as magnets and academies that have an integrated academic/occupational focus may provide academic benefits to some average and low-achieving students considered to be at risk for dropping out (e.g., Crain, Heebner, & Si, 1992). However, results are inconsistent across program sites and student groups. Studies have not examined postschool outcomes or vocational competencies. To date, studies of contextual learning offer only limited and indirect evidence of benefits of such teaching practices for secondary students.

Recent descriptive studies of schools, districts and states have provided additional information regarding important features of policy environment, school context, and classroom pedagogy that support integration of academic and occupational curricula (Bodilly et al., 1993; Stasz, et al., 1992). Researchers have identified "exemplary" programs for students with disabilities that incorporate integrated curricula (Matias, Maddy-Bernstein, & Kantenberger, 1995). Additionally, researchers have begun to identify teacher and administrator views regarding potential outcomes of integrated curricula (Finch, Schmidt, & Faulkner, 1994) or have documented program-reports of general outcomes (Matias et al., 1995). Two of the studies (Matias et al., 1995; Stasz et al., 1992) reported on the participation of students with disabilities in programs or classes that featured content or instructional elements of integrated curricula. Although each of these studies implied that integrated curricula may promote positive student outcomes, none specifically attempted to demonstrate effects. It seems clear that engagement of students with disabilities in classes or programs that provide integrated academic/occupational curricula is possible, but whether integrated curricula may benefit students with disabilities cannot be concluded from these studies.

Recent evaluations of programs that include an integrated curricula component have ranged from studies of large scale model program replications to evaluations conducted by a teacher-researcher in a single school. These evaluations have provided only limited evidence to support the contention that engagement in integrated curricula leads to benefits for students. The principle reason for this situation is that integrated curricula is typically one component among many in a complex set of interventions within programs, and these programs may be one of many being promoted by reformers. Isolating the effects of integrated curricula has been difficult also because only a few studies have examined the nature or level of implementation (e.g., Stern, Raby, & Dayton, 1992) or have attempted to systematically describe elements of implementation (e.g., Penn, 1992; Raber & Merchlinsky, 1995). Further, as found by previous reviewers, these evaluation reports -- with the exception of the career academy studies (Stern et al., 1992) -- generally failed to provide information regarding the types of data analyses used and basic statistical results needed to evaluate program effects. Information about the effects for students with disabilities is similarly limited. Although at least one (Penn, 1992) included students with disabilities and two other programs (Project Coffee, as reported by Leutheuser, 1994, and the career academies) may have, none of the studies provided sufficient detail to determine the types of disability groups that may have been represented. The Southern Regional Education Board studies (Bottoms, 1995; Bottoms & Presson, 1995) provided interesting baseline data on a large group of students using a national comparison group. Unfortunately, without additional detail regarding methodological aspects of the studies, interpretation of future evaluation results will be difficult. In general, recent program evaluations have suggested that programs with an integrated curricula component may contribute to student persistence, academic achievement, and postsecondary engagement. The benefits of integrated curricula itself are not clear from these studies.

The Problem of Assessing Implementation

Determining effects of integration efforts has not been straightforward for several reasons. Integrating academic and occupational curricula involves changes in both content and pedagogy; multiple classroom features must be defined and measured. Integration may occur within or across courses; units of analysis may be students, classes, groups of classes or schools. Integration may be coupled with other school organizational changes; effects may be confounded by multiple component interventions. Programmatic changes may take several years to fully implement and some student outcomes of interest occur post-graduation, studying effects may require a longitudinal approach. These issues pose methodological challenges for future research on integrated curricula.

Future research on integration of academic and occupational curricula for students with disabilities can strengthen understanding of the processes and effects of integrated curricula by attending to and accounting for the following: (a) participation of special populations, including those with disabilities, (b) clearly defined multiple measures or indicators of program and curriculum components, degree of implementation, and student and organizational outcomes, (c) consideration of measures that reflect the underlying values and causal-models of local implementers and participants, (d) developmental or longitudinal approach to accommodate or control for levels of implementation, and (e) complete reporting of quantitative and qualitative results in multiple formats accessible to practitioners, policy makers and researchers.

Initially, a greater understanding of what happens in classes and schools that integrate academic and occupational curricula is needed. Few of the existing studies on outcomes of integrated curricula also provided information about specific features of implementation. What type of content is actually delivered in integrated curricula classes and how? To what extent are elements deemed critical for many special education students (e.g., life skills) provided in integrated classes? To what extent are features of integrated curricula already present in the variety of classroom environments experienced by special education students? Are instructional strategies typically used in special education similar to those used in integrated classes?

Porter (1991) and Kohler (1993) have suggested that indicators of actual classroom practice are needed to overcome this weak knowledge base related to effects of school programs. In the past, outcome assessment at the program or systems level has relied on broader measures

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of student coursework such as student enrollment and number of credits in particular subjects (McDonnell et al., 1990) or narrower measures related to specific interventions (e.g., Hughes et al., in press). How school services impact student outcomes cannot be assessed adequately until there are sound indicators about the curriculum and instruction that schools actually deliver in the classroom. At this time, the development of the needed methodology has received little attention (Porter, Kirst, Osthoff, Smithson, & Schneider, 1993) and use of more sophisticated indicators is limited to national studies (McDonnell et al., 1990).

Research Objectives

Valid indicators of classroom implementation are needed for (a) future research on secondary-education reforms, (b) investigation of classroom factors associated with positive student outcomes, and (c) exploration of the validity of current conceptual models of curriculum and instruction for secondary students with and without disabilities (Kohler, 1993; McDonnell et al., 1990; Porter, 1993).

The primary objective of this study was to validate measures of classroom practice that would be sensitive to the level of integration of academic and vocational curricula and that might be applied to a variety of secondary courses including those experienced by students with disabilities. To further examine validity, secondary objectives of the study were to assess (a) reliability of the measures and instruments and (b) relevance of resulting information. If validated, the measures and instruments would be useful in future evaluations regarding implementation of integrated curricula and research on associated outcomes at the student, classroom, school, or district level.

CHAPTER II

METHODS

Research Design

This study used systematic observation methods combined with brief teacher and administrative surveys to examine the construct validity of classroom practice measures related to the integration of academic and occupational curricula. The measures of interest were sampled in four different types of classes using multiple instruments. Analyses focused on discrimination and convergence of evidence (Campbell & Fiske, 1959; Morris, Fitz-Gibbon, & Lindheim, 1987).

Sample

Two schools were selected that participate in the Southern Regional Education Board's (SREB) High Schools that Work initiative. A central feature of High Schools that Work is an emphasis on integration of academic and occupational curricula (Bottoms, Presson, & Johnson, 1992). According to the Southern Regional Education Board and school administrators, the selected high schools had implemented integrated curricula in several courses for three to four years and also had traditional high school courses. Thus, a purposive sample of classes from each school could be created to reflect groups representing traditional academic, traditional vocational, integrated curricula, and special education academic classes. These classes encompassed a variety of subjects (e.g., mathematics, cosmetology, applied communications), grades (i.e., 9th through 12th), and academic levels (e.g., remedial, honors).

Initially, the sample included 38 classes conducted by 31 teachers. Five teachers taught both an integrated curricula class and a traditional academic class. In order to maintain distinct groups, only one course's data were used for each teacher. Of the five classes eliminated in this

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way, three were academic classes and two were integrated curricula classes. The choice of which classes to maintain in the sample was made based on either (a) the teachers' reputations with school administrators as innovators with integrated curricula, in which case the integrated curricula class was selected, or (b) because the teacher reported that the materials used and activities conducted during the study period were not representative for his or her typical integrated curricula class, in which case the academic class was selected. Two special education resource teachers originally participated for two class periods each to ensure a variety of special education academic subjects in the sample, but one of each teachers' classes was dropped from the final sample to maintain similar group sizes. Two teachers, one vocational and one special education, dropped out early in the study because they could not regularly complete the required Daily Logs. Two teachers, one academic and one integrated curricula, were eliminated from the final sample because they questioned the value of their data. The integrated curricula teacher reported that he believed his class was actually academic despite its designation as integrated by the administration. The academic teacher reported that she did not believe her logs were valid because she was "never sure how to fill out the [daily logs]". The final sample consisted of 27 classes: six regular education academic, seven regular education vocational, seven regular education integrated, and seven special education academic. Figure 1 displays the course titles.

Classroom Demographics

The following classroom demographic variables were explored: class size, percent female, student classifications (i.e., special populations: low income, limited English proficiency, academically talented, special education), academic and technical rigor, and student graduation path. These variables are presented primarily for descriptive purposes, because they are frequently mentioned in the integrated curricula literature and also in related legislation.

	Academic	Vocational	Integrated	Special Education
School 1	Chemistry	Climate Control	Diversified Technology	Resource - Social Sciences
	Honors English	Commercial Foods I-III	FAMS[a] Case Studies	Lifeskills[b] - Academics
	Pre-Algebra	Office Technology I-II	FAMS[a] Statistics	Lifeskills[b] - Academics
			Principles of Technology	
School 2	Algebra II	Automotive Technology I	Applied Communications	Resource - Economics
	Reading	Commercial Foods I	Diversified Technology	Resource - Math
	Trigonometry	Cosmetology I	Principles of Technology	Lifeskills[b] - Academics
		Office Technology I		Lifeskills[b] - Academics

[a] FAMS = Ford Academy of Manufacturing Sciences

[b] Lifeskills = self-contained class for students with mental retardation; observed during academic periods

Figure 1. Course Titles

Both the literature and law (e.g., STWOA) emphasize equal access to school-to-work activities and high academic expectations for special populations. Student classifications were determined by the schools.

Two factor analysis of variance (ANOVAs) tests for school (School 1, School 2) and group (academic, vocational, integrated curricula, special education) were conducted to determine if significant interactions occurred that might reflect unintended differences among classes in the sample. If significant interactions existed, *t* tests were used to identify the interactions. If no significant interactions were evident, main effects for school or group were explored. If significant differences existed, Bonferroni post hoc tests for multiple comparisons were conducted and means examined to identify differences. The means and standard deviations for classroom demographics by group are displayed in Table 1 and reviewed individually below.

Class Size. The average class size was 17.15 (*sd* = 7.75, range 6 to 32). There was significant interaction for class size, *F* (3, 19) = 7.81, *p* = .001. Follow-up *t* tests demonstrated that vocational classes at School 1 (*M* = 12.67, *sd* = 5.51) were significantly smaller than those at School 2 (*M* = 25.75, *sd* = 4.19), *t* (5) = -3.60, *p* = 0.02, and integrated classes also were significantly smaller at School 1 (*M* = 14.00, *sd* = 3.16) than School 2 (*M* = 24.33, *sd* = 5.13), *t* (5) = -3.33, *p* = 0.02. There were no significant differences in class sizes in academic classes, *t* (4) = 1.75, *ns* (School 1, *M* = 25.33, *sd* = 5.03; School 2, *M* = 17.67, *sd* = 5.69), or special education classes, *t* (5) = 0.14, *p* = *ns* (School 1, *M* = 9.33, *sd* = 3.51; School 2, *M*= 9.00, *sd* = 2.94).

Percent females. There were no significant interactions for percent females in classes (*M* = 48.18, *sd* = 27.22), *F* (3, 19) = 0.07, *ns*. There were no main effects for percent females in classes at School 1 (*M* = 54.02, *sd* = 28.18) and School 2 (*M* = 42.75, *sd* = 26.14), *F* (1, 19) = 1.02, *ns*. Neither were there significant differences between class types, *F* (3, 19) = 0.71, *ns*.

Student classification. There were no significant interactions for percent students classified as *low income* (*M* = 40.57, *sd* = 19.66), *F* (3, 19) = 1.24, *ns*. Also, there were no significant differences in percent students classified as low income for School 1 (*M* = 38.68, *sd* = 24.98) and School 2 (*M* = 42.33, *sd* = 13.80), *F* (1, 19) = 0.06, *ns*, or by group,

Table 1. Classroom Demographics

	Class Types								
	Academic (n = 6)		Vocational (n = 7)		Integrated (n = 7)		Special Education (n = 7)		
Variable	M	(SD)	M	(SD)	M	(SD)	M	(SD)	
Enrollment	21.50	(6.38)	20.14	(8.24)	18.43	(6.66)	9.14	(2.91)	***
Males (%)	37.88	(10.77)	49.50	(40.64)	58.29	(26.37)	59.63	(21.13)	
Females (%)	62.12	(10.77)	50.50	(40.64)	41.71	(26.37)	40.37	(21.13)	
Classification (%)									
Low Income	32.81	(13.52)	48.74	(14.90)	29.88	(21.02)	49.76	(22.12)	
Limited English	7.78	(19.05)	1.37	(2.36)	2.38	(6.30)	0.00	(0.00)	
Honors	34.97	(42.40)	2.93	(5.01)	40.32	(43.61)	0.00	(0.00)	* **
Special Education	2.95	(4.63)	16.04	(17.13)	7.34	(8.12)	97.62	(6.30)	*
Rigor									
Academic	3.00	(1.67)	3.14	(0.90)	3.57	(0.54)	1.71	(1.25)	*
Technical	2.00	(0.89)	4.43	(0.79)	4.29	(0.76)	2.14	(1.46)	*
Academic Path (%)	81.67	(26.58)	4.5	(5.61)	52.86	(40.71)	6.14	(12.42)	*

***Significant interaction for school and group, $p \leq 0.05$

**Significant difference between schools, $p \leq 0.05$

*Significant difference between groups, $p \leq 0.05$

F (3, 19) = 2.08, ns. Also, there were no significant interactions for percent students classified as limited English proficient (M = 2.70, sd = 9.42), F (3, 19) = 0.91, ns. Neither were there differences between School 1 (M = 5.28, sd = 13.30) and School 2 (M = 0.31, sd = 1.16), F (1, 19) = 1.93, ns, or between groups, F (3, 19) = 0.82, ns.

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There were no significant interactions for school and group related to the percent of students classified as "*honors*" or academically talented (*M* = 18.98, *sd* = 33.74), *F* (3, 19) = 0.11, *ns*. However, significant differences were apparent between School 1 (*M* = 35.00, *sd* = 42.42) and School 2 (*M* = 4.11, *sd* = 10.99), *F* (1, 19) = 8.37, *p* = 0.009, and between groups, *F* (3, 19) = 4.22, *p* = 0.02. School 1 classified more students as honors than School 2. Also, classes designated as academic or integrated curricula enrolled more students classified as honors than vocational or special education classes.

There were no significant interactions for school and group related to percent students classified as *special education* (*M* = 32.02, *sd* = 41.02), *F* (3, 19) = 0.35, *ns*. Likewise, there were no differences between percent special education students in School 1 classes (*M* = 27.41, *sd*= 40.27) and School 2 classes (*M* = 36.31, *sd* = 42.75), *F* (1, 19) = 0.60, *ns*. However, there were significant differences by group, *F* (3, 19) = 110.05, *p* < .001. As might be expected, special education classes had higher percentages of special education students than academic, vocational, or integrated curricula classes. Students in the special education classes included 39 with mental retardation (all but 3 in self-contained "Lifeskills" classes), 20 with learning disabilities (all in the resource classes), 2 with behavior disorders, and 2 with health or sensory impairments. Students classified as special education were included also in several of the regular education classes. Two of six academic, six of seven vocational, and four of seven integrated curricula classes enrolled students with disabilities. Of the 19 special education students in regular education classes, 9 had learning disabilities, 4 had mental retardation, and 2 each had language impairments, behavior disorders, or health or sensory impairments. The maximum number of students with disabilities in any single regular education class was three in academic, seven in vocational, and six students in integrated curricula classes.

Rigor. Teachers rated the academic and technical (vocational) rigor of their classes compared to all other classes in the school using a scale of 1 (least rigorous) to 5 (most rigorous). There were no significant interactions for academic rigor ($M = 2.85$, $sd = 1.29$), $F (3, 19) = 1.32$, ns, or technical rigor ($M = 3.26$, $sd = 1.51$), $F (3, 19) = 2.92$, ns. There were no significant differences between schools on classes' academic rigor, $F (1, 19) = 0.01$, ns (School 1, $M = 2.92$, $sd = 1.44$; School 2, $M = 2.79$, $sd = 1.19$) or technical rigor, $F (1, 19) = 0.003$, ns (School 1, $M = 2.79$, $sd = 1.84$; School 2, $M = 3.21$, $sd = 1.19$). However, class types differed significantly on academic rigor, $F (3, 19) = 3.52$, $p = 0.04$, and technical rigor, $F (3, 19) = 13.78$, $p < 0.001$. Integrated curricula classes were rated as significantly more academically rigorous than special education classes. Vocational classes and integrated curricula classes were rated as having significantly more rigorous technical content than either academic or special education classes.

High school path. Teachers were asked to estimate the percentage of students in their class who belonged to particular curriculum or graduation paths. (The state recently began to require students to select an academic or vocational/technical path, but only 9th grade students would have selected paths at the time of the study.) There were no significant interactions related to teachers' estimates of the percent students in the academic path ($M = 35.77$, $sd = 40.62$) $F (3, 19) = 2.70$, ns. There was no significant difference between teachers' estimates in School 1 ($M = 44.62$, $sd = 46.70$) and School 2 ($M = 26.92$, $sd = 32.97$), $F (1, 19) = 2.41$, ns. Teachers' estimates did differ significantly by group, $F (3, 19) = 17.10$, $p < 0.001$. Academic and integrated teachers were more likely to estimate that a higher percentage of their students were in academic paths than either vocational or special education teachers.

Teacher Experience

Teachers' years of experience were analyzed in the same manner as the classroom demographics. Variables examined included: total years teaching experience, years experience teaching the course involved in the study, other professional experience outside the education field, and educational attainment. Teachers' experience by group is displayed in Table 2.

Total years teaching. There were no significant interactions related to teachers' total years teaching experience, F (3, 19) = 1.87, *ns*. Teachers at the two schools did not differ significantly on teaching experience (School 1, M = 12.69, *sd* = 8.08; School 2, M = 16.18, *sd* = 10.26), F (1, 19) = 1.67, *ns*. Teachers' experience did vary significantly by group, F (3, 19) = 3.90, p = 0.03. Vocational teachers had significantly more years of teaching experience than the special education teachers.

Table 2. *Teacher Experience*

	Class Types								
	Academic (n = 6)		Vocational (n = 7)		Integrated (n = 7)		Special Education (n = 7)		
Variable	M	SD	M	SD	M	SD	M	SD	
Total Years Teaching	16.00	(12.05)	21.43	(5.03)	13.86	(6.47)	6.93	(7.64)	*
Years Teaching Course	6.67	(6.86)	17.57	(3.95)	3.43	(1.99)	5.71	(8.02)	*
Total Years Other Profession	2.17	(3.92)	20.29	(18.55)	2.00	(2.76)	4.00	(5.42)	*

*Significant difference between groups, $p \leq 0.05$

Course Experience. There were no significant interactions for the number of years experience that teachers had with the specific course included in the study, $M = 8.41$, $sd = 7.77$, $F(3, 19) = 3.07$, *ns*. There was no difference noted by school, $F(1, 19) = 0.002$, *ns*. Teachers did have significantly different years experience with specific courses by group, $F(3, 19) = 10.13$, $p < 0.001$. Vocational teachers had more experience teaching their course than academic, integrated curricula, or special education teachers had with teaching theirs.

Other professional experience. A similar pattern of differences was noted for teachers' other professional (not teaching) experience ($M = 7.50$, $sd = 12.55$). There were no significant interactions for school and group, $F(3, 19) = 0.18$, *ns*. Teachers at different schools did not have significantly different years of other professional experience (School 1, $M = 7.85$, $sd = 12.77$; School 2, $M = 7.15$, $sd = 12.83$), $F(1, 19) = 0.28$, *ns*. However, vocational teachers had significantly more years other professional experience than all other types of teachers, $F(3, 19) = 4.42$, $p = 0.02$.

Educational Attainment. A general loglinear analysis was completed to determine the relationship between teachers' educational attainment (degree plus coursework) and affiliation with school and group. No significant relationship was found, $\chi^2(28) = 0.12$, *ns*. Most teachers had a Masters degree or Masters plus coursework, $n = 14$ (52%) or a Bachelor degree, $n = 8$ (30%). Three teachers (11%) had less than a bachelor degree and two teachers (7%) had a doctorate.

Summary of Classroom and Teacher Differences. In sum, few differences existed between schools on classroom demographic or teacher experience variables, although there was considerable variability among individual classes and teachers. Two differences were noted within schools and classes or between schools. School 1 tended to have fewer students enrolled per class in vocational and integrated curricula classes. School 1 also tended to classify more students as honors students than School 2.

Class types did differ on classroom demographics and teacher experience variables. Not surprisingly, academic classes tended to have more honors students and special education classes tended to have more special education students. Students with disabilities were more often mainstreamed in vocational and integrated classes than in academic classes. On average, integrated curricula classes had the highest rating for academic rigor. Vocational and integrated curricula classes tended to have higher ratings for technical rigor. Academic and integrated teachers were more likely to estimate that a greater percentage of their students were pursuing an academic path in high school. Vocational teachers as a group had more years experience for each teacher variable considered.

Measures

McDonnell and Ormseth (1989) noted that classroom practice indicator systems should address dimensions of content (e.g., curriculum area), depth (e.g., time on specific topics) and method of coverage (e.g., teacher style of presentation). Current curriculum restructuring efforts also support this multi-dimensional model (McDonnell, 1989). As suggested by Shavelson et al. (1991), and McDonnell et al. (1990), the selected measures in this study were based on theoretical models found in the literature (e.g., Adelman, 1989; Grubb et al., 1991; Plihal et al., 1992) and encompassed aspects of content, depth, and method of coverage. The classroom observation system in this study measured five dimensions of curriculum and instruction based on a model of integrated curricula adapted from Plihal et al. (1992): (a) content blend, (b) vocational content, (c) instruction strategy, (d) student activity, and (e) instruction grouping. Within these dimensions, categories were defined to reflect a range of possible activities discussed in the literature. These categories are defined and examples given in Appendix A. Examples were derived from the literature (e.g., Reid & Tsuzuki, 1994) and the author's pilot classroom observations.

The content blend dimension represented the degree of academic and occupational content integration (academic only, academic/reinforced occupational, fused academic/occupational, occupational/reinforced academic, and occupational only). The vocational content dimension identified the intended outcome of vocational-oriented instruction (none, general career awareness, general work behavior, general work skill, job-specific skill). The instruction strategy dimension described the teacher activity (monitor, lecture/review, lead discussion, modeling, coaching). The student activity dimension represented the type of student behavior demonstrated during an instructional activity (listen/take notes, drilled response, discussion, lab/applied - routine, lab/applied - novel). Instruction grouping identified whether the teacher worked with individuals, partners, small groups, or the whole class. Within the context of this study, the five dimensions and their categories were the school-based classroom-level variables used to demonstrate the construct of integrated curricula by differentiating four known groups of classes: (a) academic, (b) vocational, (c) integrated academic/occupational, and (d) special education academic.

Instruments

Data were collected using multiple instruments similar to those developed by Porter et al. (1993) to assess the enactment of math and science curricula at the secondary level. The specific measures in the instruments for this study reflected the dimensions and categories described above. Multiple instruments were used to demonstrate the degree to which differences on the measures were evident across data collection methods.

Instruments included: (a) an Administrative Enrollment form for documenting course enrollment, student classification, and course type; (b) a Course Questionnaire to document teachers' initial estimates of time spent in curriculum and instruction areas represented by the measures, teachers' professional background, and teachers' verification of the course as a particular type (i.e., academic, vocational, integrated, special education); (c) Daily Logs, on which, teachers reported daily class activities and described each activity using coding categories representing the specific measures within each dimension; (d) Observer Logs, which were similar to the Daily Logs, but were completed by research staff, and provided additional contextual detail such as total length of class and number of students present; and (e) Weekly Logs that provided a vehicle for teachers to report anecdotal information regarding any difficulties encountered in using the coding system, special classroom activities not captured by the daily log, changes in the school's daily functioning that may have affected classroom activities, and any questions regarding the project. Also, a follow-up survey was used to examine teachers' post-study perceptions of the data collection process and initial outcomes of the study.

Prior to formal data collection, the author tested pilot instruments in several classes and asked school teachers, administrators, and university professors familiar with classroom data collection to review the forms. Based on these informal observations and discussions, the instruments were modified to clarify ambiguous wording and to make recording data as simple and efficient as possible. Samples of the data collection instruments are included in Appendix B.

Procedures

Selection of Participants

First, the author received approval to observe the schools from the local education agency research director's office and participating schools' principals. Each principal identified one or more assistant principals or curriculum specialists to act as administrative contacts within the schools. These school administrators identified courses that represented academic, vocational, integrated curricula, and special education classes and teachers that might be interested in participating in the study. The author approached each identified teacher to explain a general purpose of the study (to test an observation system in a variety of classes), observed each class, and invited the teacher to participate. Teachers were offered an honorarium ($100) if they participated in the project.

If the teacher agreed to participate, the author requested the classroom demographic information from administrators. Requested data included class enrollment, number of males/females and student classification (e.g., low income). This information typically was supplied in the form of computer reports generated from the schools' administrative databases. The author and research assistants transferred this information to Administrative Enrollment forms. Each form was checked for accuracy by a second research assistant.

Teacher Training

Participating teachers received one to two hours of small group and individual training. During the training, the author reviewed each of the measures and definitions of coding categories. Also, each teacher was asked to describe a recent class he or she had taught. These sample activities were discussed and coded to help teachers clarify definitions as well as practice coding. Each teacher was given a manual that contained an explanation of the general purpose of the project, the measures and definitions, additional examples of activities illustrating each measure, and instructions on how to complete the required documentation. The manuals also contained all the forms and logs needed by the teachers to complete the project (except the follow-up survey) and a calendar showing due dates for each form or log. A sample manual is

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shown in Appendix C. Following the initial training, teachers were asked to review the manual and complete additional daily logs for practice. These were not collected by the author. Before beginning daily data collection, the author met with each teacher to answer questions about measures and definitions.

Teacher-reported Data Collection

Teachers were asked to submit the Course Questionnaire after completing the initial training and some practice daily logs, but before beginning actual in-class data collection. For a period of three weeks (fifteen days), teachers completed Daily Logs. Data collection occurred over a total of six consecutive weeks (three at each school) within a single semester. By coincidence, all teachers missed one day of data collection because of unplanned system-wide school closures. Thus, there were 14 possible Daily Log data collection days for each class. The teacher was instructed to complete the Daily Log as soon as possible following each selected class. Teachers could indicate on the Daily Logs that they could not identify an appropriate coding category within a dimension for a particular activity by making an "X" through the dimension coding box for that activity. At the end of each week, the teacher completed the Weekly Log. Teachers submitted logs on a daily or weekly basis to a centrally located mailbox in their schools. As logs were collected, the author examined them for completeness. If the logs were incomplete or missing (i.e., not submitted by the first day after the end of the week), the author contacted the teacher and requested the needed information. Missing data are discussed in the Data Analysis section.

Observer Training

Prior to in-class data collection, the research assistants received approximately ten hours of small group and individual training. Initial training addressed the general purpose of the project, the coding category definitions, and completion of the required forms. In addition, the research assistants practiced coding written narrative descriptions of multiple classroom scenarios. The narratives were developed by the author based on actual class activities observed while piloting the instruments. The research assistants achieved an average overall interobserver accuracy score of 82% (range 75% - 86%). Accuracy scores on dimensions ranged from 69% for Content Blend to 92% for Instruction Strategy. Accuracy was calculated as percent items scored correctly compared to a response sheet prepared by the author. Research assistants also observed at least two classes prior to the daily data collection period. During these practice observations, they completed the chronological narratives and observer logs. These were reviewed and discussed with the author.

To promote interobserver agreement, the research assistants and author met weekly during the data collection period to review the measures and to conduct interobserver agreement tests using multiple video segments and a written narrative. Agreement was calculated as number of agreements divided by number of agreements plus number of disagreements. During this period, overall interobserver agreement on the videos averaged 80% (overall session range = 55% to 100%; average dimension agreement range = 69% on Student Activity to 88% on Content Blend and Instruction Grouping). Overall agreement on the written narrative was 95% (average dimension agreement range = 89% on Content Blend to 100% on Student Activity and Instruction Grouping).

Observer-reported Data Collection

Research assistants conducted classroom observations in each class at least three times and as often as five times during the data collection period. Teachers were aware that they would be observed, but were not informed of the observation schedule. Observations were scheduled by randomly selecting five numbers corresponding to possible data collection days for each class. If possible, observations missed due to teacher or research assistant absences were rescheduled. A total of 112 observations were completed (approximately 30% of 378 total daily logs generated).

To reduce teacher and student reactivity, research assistants were instructed to be as unobtrusive as possible. For instance, they were to choose a seat on the side or back of the classroom, but close enough to see the materials being used by the students. Also, the research assistants were instructed to have few, if any, interactions with the teachers and students. The research assistants were introduced to the teachers before the daily data collection period, and teachers were asked to briefly introduce the research assistants to the students in their class.

If the teacher or students moved around the room during the class, the observers could move around also, as long as this did not disrupt the activity. The research assistants were permitted to look at materials given to students by the teacher or ask students at appropriate times about their assignment if the observer needed help to identify the content. If some students left the class to complete a course-related activity in another area of the school, the observer would follow them, make notes about their activity, and then return to the place where most of the students were working.

During each observation the observers made a chronological narrative account of classroom activities as they occurred. They used a written guide to prompt them to document activities related to the study's dimensions and categories. The research assistants were instructed to make notes that would provide enough information to help them select and justify a code for each category of interest. The classroom observation notes were attached to the completed observation log. Both the chronological notes and Observation Logs were submitted on a daily or weekly basis to the author.

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Interobserver Agreement

Daily logs and observer logs were compared to determine agreement between teachers and research staff when selecting coding categories to describe activities. One hundred ninety-one (191) activities across 112 observations were analyzed. Common disagreements were identified by noting if more than 5% of the discrepancies within any single dimension occurred as a specific coding pair (e.g., teacher coded Content Blend dimension as "fused" and observer coded Content Blend as "occupational only"). These common disagreements were identified across all activities, by group and by school.

Kappa values (Cohen, 1960) for interobserver agreement were moderate (0.56) to low (0.35), $p < 0.001$ (Hartmann & Wood, 1990). The Vocational Content dimension had the highest proportion of agreements, 71%, kappa = 0.56. There were no common disagreements identified. Student Activity had 61% agreement, kappa = 0.50. A common disagreement for coding within this dimension occurred when teachers selected "listen/take notes/test" and research assistants chose "drilled response" for the same activity. This disagreement occurred for 8% ($n = 16$) of the activities. More than half ($n = 9$) of these disagreements occurred with academic teachers. The Instruction Grouping dimension had agreement of 65%, kappa = 0.44. A common disagreement occurred as a result of teachers coding an activity as "individual" and research assistants coding the activity as "whole class", $n = 18$ (9%). Half of these disagreements occurred with special education teachers.

Proportion of agreement for the Content Blend dimension was 52%, kappa = 0.35. Common disagreements included teachers coding an activity as "fused", but research assistants coding the same activity as "occupational only", $n = 20$ (11%). Integrated curricula teachers accounted for 65% ($n = 13$) of these disagreements, and vocational teachers accounted for the remaining disagreements of this type ($\underline{n}$ = 7). Another common disagreement occurred when teachers selected "occupational, reinforce academic" and research assistants chose "occupational only", $\underline{n}$ = 20 (11%). Ninety percent of these disagreements occurred with School 1 teachers; sixty percent were attributable to integrated curricula teachers.

The Instruction Strategy dimension also had a low proportion of agreement, 53%, kappa = 0.35. Common disagreements included teachers coding an activity as "lecture/review" and research assistants coding the same activity as "monitor". This disagreement occurred for 5% ($\underline{n}$ = 10) of the activities. Half of these disagreements occurred with special education teachers. Nine percent ($\underline{n}$ = 18) of the common disagreements in this dimension were attributable to teachers coding an activity as "coaching" and research assistants coding it as "monitor". Approximately 72% ($\underline{n}$ = 13) of these disagreements occurred with School 2 teachers.

Data Analysis

Discrimination, Convergence, Reliability, and Relevance

The primary focus of data analysis was the construct validity of the measures. Construct validity was first examined using a "known group" strategy with the intent of demonstrating hypothesized differences between groups (Morris et al., 1987). Kruskal-Wallis nonparametric one-way analysis of variance tests (Kruskal & Wallis, 1952; Siegel & Castellan, 1988) were used to determine if significant differences (at the .05 level) existed between class types' (academic, vocational, integrated, special education) mean ranks on summary variables representing the five dimensions of curriculum and instruction. In cases where more than 25% of the classes tied for ranks, which may have inflated Kruskal-Wallis values, uncorrected scores were computed to verify significance. When significant values were found, follow-up tests were conducted to identify the source of the differences using the formula recommended by Siegel and Castellan (1988).

Construct validity was further examined in a second set of analyses using Kendall's W, a nonparametric test of concordance, to determine the degree to which the different instruments yielded similar rankings of the groups on the summary measures. Additionally, as described above, reliability of the instruments and measures was tested with Cohen's kappa (Cohen, 1960), which corrects for chance agreement. Finally, the content and social relevance of the dimensions and coding categories were explored using descriptive statistics from the follow-up survey and anecdotal information compiled from teacher-completed Daily and Weekly Logs, incidental conversations with teachers, and informal de-briefing interviews conducted with observers.

Summary Variables

All data from the original teacher- or observer-completed logs were entered into spreadsheets by research staff. Data entries were checked for accuracy by a second research assistant.The summary variables were constructed as follows to represent the features of integrated curricula described in the reviewed literature. General Vocational Content was the sum of time spent on (a) general career awareness, (b) general work behaviors, and (c) general work skills. Reinforced/Fused Content Blend was the sum of time spent on activities that were (a) primarily academic, but reinforced vocational content, (b) primarily vocational, but reinforced academics, and (c) fused academic and vocational. Coaching as an instruction strategy was represented only by time spent on coaching. Lab/Applied Work included student activities that were described as (a) lab/applied, routine and (b) lab/applied, novel. Cooperative Grouping consisted of time spent as (a) small groups and (b) partners. Theoretically, classes that integrated academic and occupational curricula would tend to have higher ranks on these summary variables.

Separate analyses were conducted for the Course Questionnaire, the Daily Logs, and the Observer Logs. For the Course Questionnaire, class ranks were based on constructing the summary variables from the percent time spent on activities as noted by the teacher. For the Daily Logs, the ranks for each class were based on the total percent class time spent on the summary variables across all (14) data collection days. For the Observation Logs, class ranks were based on the average percent time spent on the summary variables across observations (3 - 5 per class). For descriptive purposes, the Daily Logs total percent time was converted to average percent time by dividing the total by 1400 (based on 14 data collection days).

Missing Data

Missing and suspect data on Daily Logs that could not be addressed by the teacher were handled in one of five ways at the end of data collection. If a teacher was absent for a data collection day, the teacher's average time spent on each category was used for that day. If a teacher did not select a category in a particular dimension, the teacher's averages for time spent on the categories in that dimension were used. However, if a teacher explicitly indicated that none of the dimension categories were appropriate for a particular activity, then a 0 (no time) was assigned to each category in that dimension for that activity. If a teacher circled two categories within a dimension for a single activity and did not indicate that one was his/her first choice, then time spent on that activity was divided equally between the two categories. Finally, teachers occasionally chose incongruous categories across dimensions. For example, a teacher selected No Vocational Content as the category that best described the Vocational Content of an activity, and then selected Academic, Reinforced Occupational in the Content Blend dimension,

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suggesting that some vocational content had been addressed. In these cases, the teacher's averages were substituted in the two problematic dimensions for that activity.

The number of missing logs due to absences and the number of complete logs (all activities categorized in each dimension by the teacher) were analyzed using a two factor analysis of variance to explore whether missing data might create unintended differences among groups. The two factors were school (School 1, School 2) and group (academic, vocational, integrated, special education). The analysis on missing data due to absences (*M* = 1.78, *sd* = 1.09) indicated that there were no significant interactions for school and group, *F* (3, 19) = 0.15, *ns*, and there were no main effects for school, *F* (1, 19) = 0.11, *ns*, or group, *F* (3, 19) = 1.51, *ns*. The number of complete logs (*M* = 11, *sd* = 3.63) were similarly analyzed. The analysis indicated that there were no significant interactions for school and group, *F* (3, 19) = 0.33, *ns*, and there were no main effects for school, *F* (1, 19) = 1.84, *ns*, or group, *F* (3, 19) = 0.31, *ns*.

CHAPTER III

RESULTS

Four sets of analyses were completed to examine the construct validity of the measures of integrated curricula: (a) discriminating between groups, (b) convergence across multiple instruments, (c) reliability of measures and instruments and (d) content and social relevance. Results for discrimination, convergence, and relevance are presented below. Results for reliability analyses (interobserver agreement for research assistants and teachers) are found in the preceding Methods section.

Discriminating Between Groups

Table 3 displays the mean ranks for summary variables by class type and results of Kruskal-Wallis analysis of variance tests for all instruments. Table 4 shows the average time engaged on summary variables within each dimension by class type on all instruments. Additional tables in this section display the average percent time engaged on specific categories within each dimension by class type and instrument. Findings for each of the five integrated curricula dimensions are presented.

Vocational Content

According to the course questionnaire and the daily logs, there were significant differences between class types for time spent on general vocational content. Follow up tests for both the course questionnaire and daily log results showed that integrated classes had significantly higher mean ranks than academic classes on general vocational content, $|\bar{R}_I - \bar{R}_3| =$ 13.24 and 12.36 respectively; critical value = 11.66, $z = 2.638$, $p < 0.05$. Table 4 shows that on all instruments integrated classes, on the average, spent more time covering general

Table 3. Mean Ranks on Summary Variables

	Class Types				
Summary Variable Instrument	Academic $n = 6$	Vocational $n = 7$	Integrated $n = 7$	Special Education $n = 7$	
	R	R	R	R	$\chi^2(3)$
General Vocational Content					
Course Questionnaire	6.83	16.36	20.07	11.71	10.16*[a]
Daily Logs	7.50	15.14	19.86	12.57	8.30*
Observer Logs	7.50	13.71	16.86	17.00	6.90
Reinforce/Fused Content Blend					
Course Questionnaire	10.75	16.57	18.00	10.21	5.16
Daily Logs	6.00	19.57	19.43	9.86	14.82*
Observer Logs	7.50	19.14	17.29	11.14	9.05*[a]
Coaching Instruction Strategy					
Course Questionnaire	9.42	20.07	14.43	11.43	6.92
Daily Logs	11.00	15.43	15.50	13.64	1.35
Observer Logs	14.50	11.79	16.57	13.21	2.11
Lab/Applied Student Activity					
Course Questionnaire	8.92	19.50	15.86	8.33	9.86*[a]
Daily Logs	5.00	22.43	15.57	11.71	16.47*
Observer Logs	5.50	19.57	18.79	10.93	13.92*[a]
Cooperative Instruction Grouping					
Course Questionnaire	10.50	18.21	19.43	7.36	11.29*[a]
Daily Logs	11.75	15.79	19.86	8.29	8.30*
Observer Logs	14.00	16.07	16.79	9.14	4.17

[a] Uncorrected value

* Significant at $p \leq 0.05$

Table 4. Average Percent Time Engaged on Summary Variables

Summary Variable Instrument	Class Types							
	Academic n = 6		Vocational n = 7		Integrated n = 7		Special Education n = 7	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
General Vocational Content								
Course Questionnaire	20.33	(16.81)	57.86	(25.64)	72.14	(22.52)	40.71	(32.33)
Daily Logs	9.46	(20.14)	35.44	(35.34)	60.79	(36.28)	24.52	(21.66)
Observer Logs	0.00	(0.00)	24.02	(40.62)	35.58	(34.16)	20.04	(19.87)
Reinforced/Fused Content Blend								
Course Questionnaire	37.83	(48.29)	74.71	(20.26)	84.14	(11.48)	35.00	(37.52)
Daily Logs	9.46	(20.14)	73.04	(21.76)	69.31	(37.15)	20.27	(20.76)
Observer Logs	0.00	(0.00)	26.54	(16.88)	31.98	(32.78)	3.32	(4.39)
Coaching Instruction Strategy								
Course Questionnaire	16.67	(11.69)	52.86	(26.28)	30.00	(23.63)	22.14	(13.80)
Daily Logs	19.36	(20.38)	30.56	(27.88)	29.37	(15.57)	27.40	(16.39)
Observer Logs	6.88	(11.23)	2.38	(6.30)	11.79	(15.59)	3.81	(6.79)
Lab/Applied Student Activity								
Course Questionnaire	21.67	(32.35)	62.86	(18.23)	52.14	(14.10)	18.67	(24.55)
Daily Logs	11.30	(11.73)	70.02	(17.03)	45.13	(25.01)	29.50	(23.87)
Observer Logs	2.50	(6.12)	55.17	(22.82)	49.44	(28.44)	21.28	(34.03)
Cooperative Instruction Grouping								
Course Questionnaire	25.00	(15.17)	50.86	(25.83)	55.71	(24.91)	16.71	(8.98)
Daily Logs	15.96	(15.11)	30.68	(27.80)	40.48	(27.28)	7.84	(7.09)
Observer Logs	14.50	(9.37)	30.71	(31.02)	30.27	(30.54)	5.34	(7.85)

vocational content than all other types of classes. Vocational classes had the second highest average percent time on general vocational content. Next highest were special education academic classes, and on average, academic classes spent the least amount of time on general vocational content. Table 5 shows the average percent time the class types spent on each category within the Vocational Content dimension.

Content Blend

On the daily logs and observer logs, significant group differences were apparent for the amount of time classes experienced reinforced or fused content blend. Follow up tests on the daily logs results indicated that integrated classes had significantly higher mean ranks than academic classes, $|\bar{R}_1 - \bar{R}_3| = 13.43$, critical value = 11.66, $z = 2.638$, $p < 0.05$. On both the daily logs and observer logs, vocational classes also ranked higher than academic classes, $|\bar{R}_1 - \bar{R}_2| =$ 13.57 and 11.64 respectively, critical value = 11.66, $z = 2.638$, $p < 0.05$. It should be noted that post hoc test results for the observation logs approached but did not reach the critical value necessary for significance. Table 4 shows that integrated classes and vocational classes spent more time on average reinforcing or fusing academic and vocational content than academic or special education academic classes. This pattern was evident across all instruments. Table 6 shows the average time spent by classes for each category within the Content Blend dimension.

Instruction Strategy

There were no significant differences for coaching as an instruction strategy on any of the instruments. Table 4 shows that across all instruments, on the average, integrated curricula and vocational class teachers spent more time coaching than academic or special education academic class teachers. According to the observer logs, teachers in all class types spent

Table 5 Vocational Content Categories: Average Percent Time Engaged

	Class Types							
Category Instrument	Academic n = 6		Vocational n = 7		Integrated n = 7		Special Education n = 7	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
No Vocational Content								
Course Questionnaire	79.67	(16.81)	0.71	(1.89)	11.43	(26.10)	52.14	(40.19)
Daily Logs	90.54	(20.14)	0.76	(1.36)	25.09	(39.10)	62.26	(38.48)
Observer Logs	100.00	(0.00)	1.57	(4.16)	41.76	(43.68)	76.63	(26.07)
General Career Awareness								
Course Questionnaire	7.00	(7.21)	8.57	(6.27)	27.86	(19.58)	12.86	(10.75)
Daily Logs	0.75	(1.84)	10.36	(10.78)	36.28	(32.81)	8.77	(16.90)
Observer Logs	0.00	(0.00)	0.00	(0.00)	6.99	(10.13)	8.32	(9.43)
General Work Behavior								
Course Questionnaire	7.50	(7.58)	13.57	(10.69)	13.57	(9.00)	16.43	(15.74)
Daily Logs	6.11	(13.97)	3.58	(7.43)	3.84	(7.05)	4.442	(6.17)
Observer Logs	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
General Work Skill								
Course Questionnaire	5.83	(12.01)	35.71	(22.63)	30.71	(19.46)	11.43	(10.69)
Daily Logs	2.61	(6.39)	21.29	(34.22)	20.67	(18.93)	11.34	(15.11)
Observer Logs	0.00	(0.00)	24.02	(40.62)	28.59	(29.61)	11.71	(18.02)
Job-specific Skill								
Course Questionnaire	0.00	(0.00)	41.43	(25.28)	16.43	(14.06)	7.14	(9.51)
Daily Log	0.00	(0.00)	64.00	(35.14)	14.12	(23.99)	13.22	(21.30)
Observer Logs	0.00	(0.00)	74.41	(39.74)	19.09	(36.86)	3.33	(8.82)

Table 6 Content Blend Categories: Average Percent Time Engaged

	Class Types							
Category Instrument	Academic n = 6		Vocational n = 7		Integrated n = 7		Special Education n = 7	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Academic Only								
Course Questionnaire	61.33	(47.55)	2.86	(3.93)	11.43	(11.07)	40.00	(40.10)
Daily Logs	90.54	(20.14)	0.76	(1.36)	25.30	(38.98)	53.97	(41.18)
Observer Logs	100.00	(0.00)	1.57	(4.16)	41.68	(43.76)	64.11	(31.99)
Academic, Reinforce Occupational								
Course Questionnaire	19.17	(39.80)	7.14	(9.51)	24.71	(17.14)	19.29	(21.69)
Daily Logs	3.00	(5.45)	14.81	(12.21)	17.68	(21.64)	7.06	(7.73)
Observer Logs	0.00	(0.00)	0.00	(0.00)	14.86	(24.05)	3.32	(4.39)
Fused								
Course Questionnaire	17.00	(40.67)	29.29	(32.33)	34.71	(15.02)	4.43	(9.25)
Daily Logs	6.46	(14.84)	26.36	(32.59)	27.96	(30.93)	2.12	(3.65)
Observer Logs	0.00	(0.00)	0.00	(0.00)	9.52	(25.20)	0.00	(0.00)
Occupational, Reinforce Academic								
Course Questionnaire	1.67	(4.08)	38.29	(23.46)	24.71	(19.21)	11.29	(12.87)
Daily Logs	0.00	(0.00)	31.43	(30.36)	23.66	(23.24)	11.08	(14.83)
Observer Logs	0.00	(0.00)	26.54	(16.88)	7.60	(13.01)	0.00	(0.00)
Occupational Only								
Course Questionnaire	0.00	(0.00)	22.43	(19.23)	2.86	(3.93)	7.14	(12.20)
Daily Log	0.00	(0.00)	26.64	(21.95)	5.40	(7.41)	16.19	(21.68)
Observer Log	0.00	(0.00)	71.89	(14.32)	26.34	(38.82)	14.95	(18.13)

relatively small amounts of time using coaching as an instruction strategy. Table 7 shows the average percent time spent by teachers for each category of Instruction Strategy.

Student Activity

On all instruments, class types differed significantly for time engaged in lab/applied student activity. On the observer logs, integrated curricula classes had significantly higher mean ranks than academic classes, $|\bar{R}_1 - \bar{R}_3| = 13.29$, critical value = 11.66, $z = 2.638$, $p < 0.05$. Vocational classes ranked significantly higher than academic classes on both the observer logs and daily logs, $|\bar{R}_1 - \bar{R}_2| = 17.43$ and 14.07 respectively, critical value = 11.66, $z = 2.638$, $p < 0.05$. On the course questionnaire, vocational classes had higher mean ranks than special education classes, $|\bar{R}_2 - \bar{R}_4| = 11.17$, critical value = 10.58, $z = 2.394$, $p < 0.05$. Table 4 shows that on all instruments vocational class students spent more time on average doing lab/applied activities than all other class types. Integrated class students were next highest on all instruments in terms of student time on applied activities. Academic class students spent the least time doing applied activities, except as reported by teachers on the course questionnaire. Table 8 provides the average percent time that students spent on each Student Activity category.

Instruction Grouping

Class types differed significantly for time spent on cooperative instruction grouping, according to the course questionnaire and the daily logs. In both cases, integrated classes had significantly higher mean ranks for cooperative instruction grouping than special education classes, $|\bar{R}_3 - \bar{R}_4| = 12.07$ and 11.57 respectively, critical value = 11.20, $z = 2.638$, $p < 0.05$. As shown in Table 4, students in integrated curricula classes and vocational classes spent more time on average in cooperative instructional groupings than students in academic or special education academic classes. Table 9 shows the average percent time that students spent in each category of Instruction Grouping.

Table 7 Instruction Strategy Categories: Average Percent Time Engaged

	Class Types							
Category Instrument	Academic n = 6		Vocational n = 7		Integrated n = 7		Special Education n = 7	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Monitor								
Course Questionnaire	25.00	(24.50)	11.43	(17.49)	29.29	(24.57)	10.00	(10.41)
Daily Logs	39.23	(24.51)	27.73	(17.65)	42.98	(23.78)	20.11	(20.98)
Observer Logs	39.53	(9.82)	60.71	(19.02)	48.11	(28.94)	40.88	(29.85)
Lecture/Review								
Course Questionnaire	41.67	(19.41)	12.86	(6.36)	16.43	(10.29)	30.29	(16.95)
Daily Logs	29.70	(12.84)	13.28	(6.76)	13.29	(12.56)	27.41	(11.71)
Observer Logs	34.07	(13.89)	15.87	(15.82)	15.96	(19.89)	34.19	(22.83)
Lead Discussion								
Course Questionnaire	12.50	(14.41)	8.57	(6.27)	10.00	(7.64)	19.29	(6.73)
Daily Logs	8.33	(7.18)	7.57	(9.11)	8.98	(14.59)	12.91	(11.96)
Observer Logs	3.38	(5.40)	0.00	(0.00)	8.57	(14.92)	9.67	(18.31)
Modeling								
Course Questionnaire	5.83	(4.92)	14.29	(16.44)	17.86	(11.85)	18.29	(14.16)
Daily Logs	3.08	(4.62)	20.89	(22.25)	5.39	(3.22)	12.16	(9.31)
Observer Logs	16.15	(18.78)	21.04	(20.43)	15.57	(18.37)	11.45	(11.57)
Coaching								
Course Questionnaire	16.67	(11.69)	52.86	(26.28)	30.00	(23.63)	22.14	(13.80)
Daily Log	19.36	(20.38)	30.52	(27.92)	29.37	(15.57)	27.40	(16.39)
Observer Log	6.88	(11.23)	2.38	(6.30)	11.79	(15.59)	3.81	(6.79)

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Table 8. Student Activity Categories: Average Percent Time Engaged

	Class Types							
Category Instrument	Academic n = 6		Vocational n = 7		Integrated n = 7		Special Education n = 7	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Listen/Take Notes/Test								
Course Questionnaire	36.67	(25.23)	17.14	(7.56)	15.00	(9.13)	17.17	(22.28)
Daily Logs	51.56	(20.78)	18.93	(10.59)	30.52	(20.57)	18.77	(24.70)
Observer Logs	38.60	(22.08)	19.05	(17.10)	20.49	(21.33)	21.73	(19.49)
Drilled Response								
Course Questionnaire	20.00	(15.17)	10.71	(8.87)	10.00	(9.57)	36.67	(20.90)
Daily Logs	28.81	(20.03)	7.43	(10.33)	9.58	(7.98)	31.42	(21.51)
Observer Logs	52.48	(25.05)	25.79	(15.54)	20.08	(17.40)	47.01	(27.38)
Discussion/Discovery								
Course Questionnaire	21.67	(19.92)	9.29	(7.87)	20.00	(14.34)	19.17	(14.63)
Daily Logs	7.94	(6.91)	4.25	(6.44)	14.76	(18.45)	19.88	(12.26)
Observer Logs	6.42	(5.20)	0.00	(0.00)	10.00	(14.43)	9.99	(11.78)
Lab/Applied, Routine								
Course Questionnaire	19.50	(28.65)	51.43	(21.55)	34.29	(18.80)	9.33	(12.28)
Daily Logs	11.30	(11.73)	64.78	(20.23)	33.98	(17.46)	18.71	(20.33)
Observer Logs	2.50	(6.12)	52.79	(22.28)	36.21	(25.98)	9.14	(12.75)
Lab/Applied, Novel								
Course Questionnaire	2.17	(3.92)	11.43	(13.76)	17.86	(19.12)	9.33	(12.28)
Daily Log	0.00	(0.00)	4.62	(7.89)	11.15	(14.15)	10.79	(14.59)
Observer Log	0.00	(0.00)	2.38	(6.30)	13.23	(17.19)	12.14	(24.99)

Table 9 Instruction Grouping Categories: Average Percent Time Engaged

	Class Types							
Category Instrument	Academic n = 6		Vocational n = 7		Integrated n = 7		Special Education n = 7	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Whole Class								
Course Questionnaire	60.83	(24.99)	41.14	(24.20)	31.43	(25.94)	70.00	(18.03)
Daily Logs	77.82	(17.07)	52.39	(32.81)	49.15	(25.46)	64.92	(16.51)
Observer Logs	81.33	(9.72)	51.16	(34.27)	50.10	(41.61)	81.14	(10.60)
Small Groups								
Course Questionnaire	17.50	(9.87)	30.86	(23.60)	34.29	(21.88)	7.71	(10.72)
Daily Logs	11.23	(13.19)	26.43	(27.98)	23.24	(15.07)	7.14	(6.57)
Observer Logs	9.92	(9.27)	26.00	(28.77)	25.84	(31.72)	5.35	(7.85)
Partners								
Course Questionnaire	7.50	(9.87)	20.00	(22.36)	21.43	(27.50)	9.00	(10.18)
Daily Logs	4.74	(8.64)	3.54	(7.99)	17.25	(34.43)	0.69	(1.36)
Observer Logs	4.58	(7.14)	4.71	(8.66)	4.43	(8.44)	0.00	(0.00)
Individuals								
Course Questionnaire	14.17	(18.55)	8.00	(5.45)	10.00	(6.46)	13.29	(15.56)
Daily Logs	6.21	(4.96)	17.64	(25.92)	10.37	(5.20)	27.24	(17.83)
Observer Logs	4.17	(5.85)	18.13	(22.62)	19.63	(26.53)	13.51	(8.12)

Convergence Across Instruments

There was a high degree of concordance across instruments for groups' mean ranks on all summary variables except coaching instruction strategy. Mean ranks are displayed in Table 3. Kendall's W values are displayed in Table 10. One teacher (special education) did not provide estimates on the course questionnaire for time spent on Student Activity categories. Therefore, that teacher was not included in the concordance test for Student Activity, reducing the number of possible data points to 26 for that particular test. All classes were included in the concordance tests for the other dimensions.

Table 10. Kendall's W (Coefficient of Concordance) for Mean Ranks on Instruments

Summary Variable	χ^{2a}	W	p
General Vocational Content	61.58	0.79	< 0.001
Reinforced/Fused Content Blend	50.69	0.65	0.003
Coaching Instruction Strategy	26.49	0.34	0.44
Lab/Applied Student Activity	59.75	0.80	< 0.001
Cooperative Instruction Grouping	52.72	0.68	0.001

[a] $df = 26$, except Student Activity dimension $df = 25$

Content and Social Relevance

Eighteen (67%) of the 27 teachers in the sample completed the follow-up survey. School 1 and School 2 were represented by equal numbers of respondents. Respondents included all six of the final sample academic teachers, five of seven integrated curricula teachers, four of seven special education teachers, and three of seven vocational teachers.

Data Collection

The first section of the follow-up survey asked teachers about their perceptions of the classroom data collection process. Responses were structured as Likert-type scales with four points. Seventy-eight percent (n = 14) of the respondents reported that completing the course questionnaire took twenty minutes or less. Half of these were able to complete the course questionnaire in 10 minutes or less. Four teachers took 21 - 30 minutes to complete the course questionnaire. All responding teachers reported that the daily log usually could be completed in 10 minutes or less. Forty-four percent were able to complete it in five minutes or less. Eighty-nine percent (n = 16) of the respondents noted that the format of the daily logs made documenting classroom activities fairly or very easy. Teacher's written anecdotal comments also suggested that the daily logs were simple to use. Two noted that documenting classroom activities was a little difficult. Fourteen (78%) of the teachers reported they felt fairly or very confident about choosing among the codes in each dimension on the daily log. The remaining four reported being a little unsure. Eighty-nine percent (n = 16) of the teachers said that the observers (research assistants) were not at all disruptive to the classroom. Two said the observers were a little disruptive. Fifteen (83%) of the teachers said that observer presence did not at all influence how they documented and coded activities on the daily logs. Three reported that they were influenced a little.

Results

The second section of the survey asked each teacher to examine summary information for his or her class and the four class types. The summary information included the daily log data only, expressed as percent class time engaged within each category and dimension. All teachers believed that the summary daily log information for their classes represented the activities that occurred in their classes during the project time fairly (67%) or very (33%) well. Ninety-four percent (n = 17) of the teachers also felt the summary information reflected the types of activities that occur in their class during an entire semester. One teacher suggested that the summary information reflected this only a little.

Teachers also were presented with brief descriptions of the differences (statistical significance and directional differences of means) between class types based on daily log data. They were asked to comment on whether they believed the results accurately represented important differences between class types. Teachers could select yes, no or not sure. Space was provided for additional written comments. Teachers typically reported that they believed the results did represent important differences (ranging from 94% for the Content Blend dimension to 67% for Vocational Content and Instructional Grouping dimensions). Eighty-three percent of the teachers also supported the statement that special education classes were more likely than other types of classes to spend time on content other than academic or vocational (e.g., personal life skills).

Utility

Finally, teachers were asked to select from a list of possible ways in which the summary information about classroom activities might be useful. Teachers responses are presented in Table 11. A recurring theme in teachers' written comments on the follow-up survey was the idea that keeping the daily logs and seeing summary information was useful for prompting teacher reflection on instruction. For example, one teacher noted that she gained insight into how much time she spent lecturing as opposed to using other instruction strategies. Another noted that she was made aware of how much time and about what other teachers teach, and this was helpful to her.

Table 11 Teacher Support for Uses of Summary Information

% (N = 18) Supporting	Use
83	Describing some aspects of how I use classtime to other teachers
83	Describing some aspects of how I use classtime to school administrators
83	Describing some curricular and instructional differences between types of classes in my school
72	Monitoring some aspects of how I use classtime to inform my personal professional development
67	Monitoring some aspects of how curricula and instruction are implemented in my school
56	Monitoring some aspects of how I use classtime to inform a school-wide assessment of classroom activities
0	Other
0	None of the above

Some teachers suggested in their written comments on the weekly logs and follow-up survey that some class activities may not have been well represented by the daily log data because (a) certain activities occur only at certain times in the semester, (b) choosing between codes was difficult for some activities, and (c) some activities focused on personal life skills, which were difficult to code on academic and vocational dimensions.

Observers also noted this last problem when trying to code such activities as discussion about "getting an apartment". Anecdotally, observers suggested that "coaching" became (for teachers) a "catch-all" description for a variety of instruction strategies, and the observers reported seeing little "real" coaching. Similarly, the observers reported seeing few examples of fused Content Blend, but they believed teachers expected students to recognize the implicit academic or vocational value of activities. Several questions presented by teachers to the author at different times throughout training and data collection lent support to this belief. For example, some vocational teachers suggested that any school work that involved reading was implicitly academic even if the teacher didn't explicitly teach or evaluate reading skills or stress the academic relevance of reading to students. Likewise, some academic teachers suggested that all reading activities were inherently vocational because students would more than likely need to read on the job.

Other coding problems identified anecdotally by observers related to the issue of embedding "high level" work in the Content Blend dimension categories' definitions. For example, in vocational classes and in the special education classes, the academic work expectations for some activities appeared low to observers although they believed that teachers explicitly blended academic and vocational work. Also, when coding some special education class activities, observers had difficulty coding activities that teachers called discussion. To the observers, these activities often appeared more like teacher-directed drilled response.

CHAPTER IV

DISCUSSION

The purpose of this study was to explore the validity of a set of observable measures representing integrated academic/occupational curricula in high school classrooms. These measures incorporated features of curriculum and instruction that, in recent school-to-work transition literature, have been associated with the construct of integrated academic/occupational curricula. Of particular interest was whether the set of measures would reflect significant differences among class types, including classes serving students with disabilities, and whether these differences could be observed across different types of instruments. Specifically, it was theorized that integrated curricula classes would have higher mean ranks on the measures than would other types of classes. To further examine validity, secondary objectives of the study were to determine (a) the reliability of the measures and instruments for describing integrated curricula and (b) the relevance of the resulting information.

Summary of Findings

The findings provide support for the construct validity of the proposed measures of integrated academic/occupational curricula. The measures did differentiate between integrated or vocational classes and traditional academic or special education academic classes. The measures were less sensitive to differences between integrated and vocational classes. These results were demonstrated across multiple instruments. Findings of differences between groups and concordance across instruments are summarized below as qualitative differences, significant differences, concordance, and failure to discriminate.

Qualitative differences. A national assessment of vocational education found that current levels of classroom academic/occupational integration were modest or minimal (Boesel et al.,

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1994). Only 54% of vocational teachers reported spending at least 10% of classtime on any academic content and that content was most often at a basic skill level. Only 18% of academic teachers in the national assessment reported spending at least 10% of classtime on vocational content. This was most likely to occur in math classes. The present study also suggests that academic teachers spend little time (20% of classtime or less) on vocational topics of any type. Vocational teachers were more likely than academic teachers to report blending academic with vocational content. However, the extent to which this actually occurred is not clear and is discussed further below.

Based on findings of average percent class time engaged, all instruments showed that teachers and students in integrated classes spent more time on all summary variables -- general vocational content, reinforced/fused content blend, coaching instruction strategy, lab/applied student activity, and cooperative instruction grouping -- than did academic or special education academic classes. Teachers and students in vocational classes also spent more time on these summary variables than academic and special education classes, except in the area of coaching as reported by observer logs.

A similar pattern was evident in the mean ranks of classes on the summary variables. Integrated classes had higher mean ranks than academic or special education academic classes on all summary variables across all instruments, except that special education classes had a slightly higher mean rank for general vocational content as reported on observer logs. Vocational classes also had higher mean ranks than academic and special education classes on all summary variables across all instruments, except that vocational classes had the lowest mean rank as reported by observer logs for coaching. Generally, integrated academic/occupational classes and

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vocational classes had the highest mean ranks on summary variables, and these two types of classes appeared most alike in percentages of classtime engaged on the summary variables.

Significant differences. Tests of significance based on mean ranks typically demonstrated that vocational or integrated classes could be differentiated from academic or special education classes, except in the area of coaching as instruction strategy. Mediating these results is the fact that teacher-research assistant interobserver agreement was moderate to low, while interobserver agreement among observers was moderate to high. This suggests that the observer logs provide more reliable estimates of observable classroom activity. In fact, findings of significant differences between class types did vary by instrument type.

Teachers in integrated curricula classes spent significantly more time covering general vocational content than those in academic classes, according to the course questionnaire and daily logs. Teachers in both integrated and vocational classes spent significantly more time providing reinforced/fused content blend than those in academic classes, according to the daily logs. There were no significant differences between class types on any instrument for teachers' use of coaching instruction strategy. According to the observer logs, students in both integrated and vocational classes spent significantly more time on lab/applied student activity than those in academic classes. The course questionnaire and daily logs also showed this difference between vocational and academic classes, as well as between vocational and special education classes. Finally, students in integrated classes spent significantly more time on cooperative instruction grouping than those in special education classes, according to the course questionnaire and daily logs.

Concordance. Although findings of significance varied by instrument type, there was a strong concordance of rankings among the course questionnaire, daily logs and observer logs on all summary variables except coaching. In other words, classes that received higher rankings on one instrument also were more likely to receive higher rankings on other instruments. Although observers documented less time engaged on summary variables than teachers reported on the daily log, and teachers reported less time engaged on summary variables through the daily logs than they did on the course questionnaires, a consistent pattern of rankings was evident. Integrated and vocational classes typically received higher ranks and academic and special education academic classes typically received lower ranks.

Failure to discriminate. Inconsistent findings of significant differences across the instruments or lack of significant differences on any instrument (i.e., coaching instruction strategy) may be attributable to several factors. First, none of the instruments could be shown to be exceptionally reliable in terms of interobserver agreement. Research staff demonstrated moderate to high agreement with each other, but teachers and research staff had lower levels of agreement. Therefore, inconsistent results across instruments may be due to the fact that certain instruments were less reliable indicators of differences among class types. Also, there was considerable variability within class types.

Second, the phenomena of interest may not have been present or observable. Based on the observer logs, it appears that teachers and students in integrated curricula classes spent more time on the summary variables. However, the variables may not have been implemented to such a degree as to consistently and significantly distinguish integrated curricula classes from other types of classes. Also, important elements of integrated curricula may have been less observable than teachers intended; based on (a) anecdotal comments suggesting teachers believed certain features were implicit within activities, and (b) low levels of agreement between teachers and research staff.

Finally, it may be that the construct of integrated curricula as represented in the summary variables is limited or skewed. For instance, in special education classes, integration of academic concepts occasionally occurred with personal life skills activities rather than vocational activities. Personal life skills contexts may or may not be equally useful for demonstrating "relevance" of academic skills or creating opportunities for applied student activities, two of the summary variables investigated. Also, observers and teachers anecdotally reported having doubts about documenting an activity as integrated -- despite obvious academic and vocational blending -- if the academic expectations tended to be less than what they considered college preparatory level work. Embedding the idea of college preparatory level academic work in the definition of the content blend categories may have affected whether or not teachers and research assistants coded activities as "reinforced" or "fused" content blend.

Implications for Practice and Policy

This study has two important implications for classroom practice and education policy. First, findings suggest that students may experience different types of curriculum and instruction in integrated curriculum classes than in other more traditional class types. Second, valid measures of integrated curricula have several important uses for program evaluation.

Students' Experiences in Integrated Curricula Classes

In this study, integrated academic/occupational classes did in practice provide curriculum and instruction that were qualitatively different from traditional or special education academic classes. A clear difference was seen in the amount of time students were engaged in hands-on activities and were exposed to both academic and vocational content. Students in integrated curricula classes, according to observers, spent on the average half the classtime in hands-on activities. Almost a third of the classtime was devoted to activities that reinforced or fused academic and vocational content. These applied and blended activities were rarely practiced in the traditional or special education academic classes. Integrated curricula classes also were more likely to enroll students with disabilities than the traditional academic classes. These findings suggest that students, including those with disabilities, who prefer an applied learning approach to academics may find a better match in classrooms that provide integrated academic/occupational curricula. On the other hand, special education students who spend a portion of their day in self-contained special education classrooms as well as in regular education integrated curricula classes may experience very different types of curriculum and instruction as they move from class to class. It may be important for teachers to recognize these differences and determine whether students who are mainstreamed require preparation or support to meet the different activity demands.

It is interesting to note that applied activities and blended curricula also were found more often in traditional vocational classes than in traditional or special education academic classes. In this study, the vocational classes also were more likely to enroll students with disabilities. Although the finding that students often engaged in applied activities in vocational classes may not be surprising, the extent to which vocational class teachers also provided activities that reinforced or fused academic content may be less expected. This finding suggests the feasibility of policies aimed at upgrading the academic content of vocational classes while preserving their applied focus. It is possible that some vocational classes provide avenues to academic material in the same manner as integrated curricula classes.

It has been proposed that a potential benefit of integrated curricula classes is that students would not have to choose between academic and applied occupational courses as is often the case in current high school settings (Benz & Kochhar, 1996; Phelps, 1992). This study

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provides some preliminary support for this belief. However, this study can not address the question of whether the academic content was comparable across class types. Nor can it answer the policy question of whether the academic content was functional for all students, including those with disabilities and those considered academically talented. It may only be concluded that students in this study were more likely to experience both academic and vocational content in integrated and vocational classes.

Program Evaluation

Valid measures of integrated curricula have two important uses for program evaluation. First, the indicators may be used to monitor implementation of integrated curricula for purposes of program development in schools that adopt an integrated curricula approach. Second, the measures may be used to assess the relation between implementation of integrated curricula components in the classroom and student outcomes such as achievement in content areas, school engagement and graduation, and postschool success in employment and postsecondary education. As part of a system of school-level indicators these types of measures are a way for policymakers and practitioners to purposefully shape improvement efforts at multiple system levels (Levesque, Bradby, & Rossi, 1996; National Study of School Evaluation, 1993).

Monitoring Program Implementation. One use of the measures and instruments in this study is to support schools' self-assessments and dialogues with parents and other stakeholders regarding the goals and methods used in school programs. This type of information would fit into a model-guided method of program implementation monitoring (Brekke, 1987). In this type of monitoring, data are collected that reflect the underlying purposes or theories of program operation. These data are then used systematically by school personnel and stakeholders to inform or refine existing programs.

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Teachers generally supported the belief that differences between class types found through the daily log represented important differences, suggesting some degree of face validity for the measures. Further, teachers expressed support for the idea that collecting classroom information about the measures would be useful for a variety of informational and professional purposes, such as monitoring how they use classtime to inform their own professional development.

Any of the instruments would be feasible to use in a school self-assessment. Generally, the teachers did not view any of the reporting methods as overly intrusive in terms of time required nor disruptive to class activities. Daily logs offer advantages in terms of providing the most information and generated positive teacher response related to reflection on practice and professional development. However, it is possible that if additional training requirements were imposed to increase reliability or if a longer data collection period was required, the teachers would have been less positive about completing the logs. (It should be noted, however, that two teachers did not complete the study and were not included in the final sample because they were unable to regularly complete the daily logs.) The course questionnaire contained the most inflated estimates of time engaged on the summary variables, but has advantages of being easy to administer and requiring minimal training time. The observer logs were most reliable and relatively few observations were needed to characterize class types. However, extended training was required to maintain reliability.

The measures and instruments meet several substantive and technical criteria for classroom practice indicators (Blank, 1993; Oakes, 1986; Porter, 1991). They focus on central features of schools related to curriculum and instruction; they are measurable, feasible to collect, readily understood and considered credible, and provide useful information to decision-makers (teachers, administrators and other policymakers). Although these measures alone are not sufficient for comprehensive monitoring (i.e., they do not address organizational or school context variables), they may serve as a valuable component of implementation evaluations related to integrated curricula reforms.

Assessing Outcomes

Most evaluation studies of programs involving integrated curricula have typically ignored levels of implementation in the classroom and have, therefore, failed to provide convincing evidence of the impact of integrated curricula. This lack of information makes it difficult for practitioners and policymakers in regular and special education to judge the value of an integrated curricula approach for students with and without disabilities. This study begins to address this problem by identifying measures that could be used to examine the link between what actually happens in integrated curricula classrooms and student outcomes, such as academic achievement. At the school or classroom level, these measures could be used to document degree of implementation. This information would provide greater insight into the results of evaluations purporting to show different outcomes for different class types.

Given the overall moderate reliability of the measures and instruments, they should not be used as a means to identify cause-effect relationships or for accountability purposes (Porter, 1993). However, the measures could inform policy by permitting exploration of the relative association between integrated curricula features and student and other program outcomes. For example, at the state or district level, outcomes of interest may relate to policy issues of equity and the value added to student outcomes by varying levels of resources delivered (Willms & Kerckhoff, 1995). The measures in this study, coupled with enrollment data, could be used to examine access by special populations to integrated curricula. Also, given the moderate correlation between rankings on instruments, course questionnaire results may serve as adequate indicators of some classroom variables in studies contrasting outcomes of integrated and traditional academic curricula. These comparisons would be strengthened by periodic observation of actual in-class practices and examination of relation between the course questionnaire and observation results.

Limitations of Study

This study must be considered an exploratory study. The sample was chosen to permit discrimination between class types within a comprehensive school setting. It might be argued that elimination of teachers from the final sample for the variety of reasons described in the sample section may have reduced the variability within class types and increased the possibility of significant findings. This would be of greatest concern in a study attempting to establish the relative influence of class type on student outcomes. However, for the purposes of this study, it was necessary to maintain "true types" in order to examine ability of the measures to discriminate among class types. In fact, there was considerable variability among individual classes within class types.

The sample was not intended to be representative of other classes or schools. The results related to time engaged on the summary variables by different class types should not be considered representative of academic, vocational, integrated or special education academic classes in other schools. The measures were not designed to suggest that spending a specific amount of time on particular areas of curriculum and instruction would make a class "integrated." Also, the measures did not identify significant differences between vocational and integrated classes. As discussed earlier, this may be a result of limited implementation in the sample schools, poor reliability, or that the five dimensions and their categories were not sufficiently defined to differentiate between the two class types. It is important to note that in situations where teachers might be held accountable for their performance on the measures, the data would be subject to further bias and would be considered less reliable than in this study.

A further limitation of the study is that, although the measures were based on the available literature, the definitions used may not address areas of concern in other schools. For example, there was no attempt in this study to examine the depth or breadth of academic topics available in the classes. Also, the special education students in this study participated in self-contained academic classes or were mainstreamed in regular education classes. They were typically students with mild to moderate mental retardation or learning disabilities. If classes serving students with other types of disabilities (e.g., behavior disorders) or classes arranged in other ways (e.g., special education self-contained vocational) had been included in the study, participants might have identified other dimensions of curriculum and instruction that should be considered as relating to integrated curricula. Similarly, another limitation of this study is that only school-based classrooms were examined. Classes that were based in the community or work settings may have important features that were not considered in relation to the measures tested in this study.

Directions for Future Research on Integrated Curricula

Based on these implications and limitations, four areas for future research on integrated curricula are examined below: (a) increasing validity and reliability, (b) program evaluation, (c) students with disabilities, and (d) personnel preparation.

Increasing Validity and Reliability

Several possibilities for future research are suggested by the identified limitations of this study. First, the validity of the measures should be further assessed in other schools, in both school- and community-based classes, and with other types of students with disabilities. This type of research would permit investigation of the generalizability or transferability of the measures. Second, additional measures should be included that would help to extend and refine the definition of integrated curricula. These additional measures should systematically document: (a) blending of other functional contexts (e.g., life skills) with academics, and (b) academic content and skill level of activities. Further, experts familiar with the literature and practices related to integrated curricula could be engaged in a consensus process to determine support for and relative weight given to these measures within a larger school-to-work conceptual framework. Also, it would be interesting to examine whether variability within class types would be reduced and results modified if the sample classes were chosen from within a limited set of academic content areas (e.g., mathematics).

Program Evaluation

A fundamental issue is to determine which integrated curricula variables (if any) are critical to improving student outcomes. A related issue is to determine how much of any particular feature or combination of features could be considered adequate implementation of integrated curricula. What degree of implementation is necessary to create differences in student outcomes? Is there a range of implementation that is effective? Because these questions have yet to be answered, critical components of integrated curricula found in the literature must still be considered descriptive rather than prescriptive (Chen, 1990).

Another important question raised by teachers during this study was the degree to which teachers must make the connections between academic and vocational content areas explicit for students. This issue, in part, could be addressed through additional teacher or observer training regarding definitions of the categories used to code activities. However, questions regarding student perceptions should be asked also. One purpose of blending content is to make curricula more relevant to students. Student perceptions of relevance may relate to (a) explicit teacher statements about relevance, (b) the nature of materials used or the content and type of activity, (c) the student's prior knowledge or belief about relevance of activities, and (d) proximity of events for which the student believes the information will be useful. Future studies should explore each of these factors to determine their relative influence on student perceptions of relevance.

There is also a need to more thoroughly examine the features of integrated curricula as they exist in the context of different schools and programs, especially given the multiple reforms influencing schools (Little, 1992). What other processes do schools implement in order to facilitate or complement integrated curricula? Do these other activities account for positive student outcomes as much as integrated curricula? Answering these types of questions would provide more information to policymakers who must decide the relative importance, costs and benefits of competing reform efforts.

Finally, it may be useful to expand upon and revise the items within the course questionnaire. The purpose of further developing the course questionnaire would be to provide an efficient and more accurate representation of classroom activities. Such an instrument would be less time consuming and easier to administer.

Students with Disabilities

An issue identified by some teachers participating in this study concerns the emphasis on vocational content as a means to create functional contexts for academic material. Other contexts, such as life skills or high interest topics were not included in the measures' definitions. This issue raises the question of whether vocational, life skills, and high interest topics can be equally useful and meaningful for creating functional contexts for academic material. This concern is supported by the special education literature, which suggests that a high quality school-to-work transition curriculum can and should include life skills content (Benz & Kochhar, 1996). Addressing this issue requires further exploration of the purposes of blending content and opportunities to compare the effects of activities that place academics within different functional contexts.

Another concern raised by teachers and observers related to the fact that in this study, the concept of college preparatory work was embedded in definitions of integrated curricula, specifically within the content blend dimension. In future studies, it may be useful to assess the academic level of activities separately. A related question concerns the role of academic content in curricula for students with severe cognitive impairments. Although school-to-work policy emphasizes that all students should have challenging academic content, how this concept translates into practice for some students requires further exploration and discussion.

This study poses another problem regarding possible differences in vocational approaches for some students in regular versus special education. In the regular education literature, integrated curricula incorporates the idea of general vocational content and emphasizes that general vocational content should precede job-specific training. Does it benefit students with mild and severe disabilities as well as students without disabilities to experience a sequence of vocational courses and activities that progress from general to specific? The special education literature suggests that it is more functional to provide job-specific training to students with the most severe disabilities. For students with severe impairments, training within specific environments for specific skills followed by generalization to multiple environments or related skills is more effective (Cipani & Spooner, 1994; Wagner, 1991). An interesting finding in this study is that the special education academic classes tended to rank higher for amount of time on general vocational content than other class types. Future studies should describe which types of students are exposed to what types and amounts of general vs. job specific vocational content.

Finally, it may be important to further examine the types of supports delivered and needed to facilitate participation of students with disabilities in integrated classes. Previous studies of classrooms that include exceptional students suggest that regular education teachers often do not differentiate curriculum and instruction for those students (e.g., McIntosh et al., 1993; Westberg et. al., 1993). Future research should examine whether the types of curriculum and instruction generally provided in integrated curricula classes meet the needs of students with specific disabilities.

Personnel Preparation

Another critical issue raised by this study concerns the training and experience of participating teachers in relation to class types. It is interesting to note that the integrated curricula teachers had education and professional backgrounds similar to the traditional academic teachers. However, their classes looked more like the vocational classes in terms of vocational content, content blend, instruction strategy, student activity and instruction grouping. This finding may have resulted from (a) the incidental and inservice training teachers received prior to implementing the courses, (b) teachers' attitudes or interests in promoting certain types of activities, or (c) the structure and components of the specific curriculum package used. This information has implications for the type of teacher preparation needed to successfully implement integrated classes. Further, these training, personnel, and curriculum structure variables need to be considered as possible secondary indicators relating to degree of implementation.

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Conclusion

This study explored in a systematic manner important aspects of curriculum and instruction in secondary classrooms and how these relate to the construct of integrated academic/occupational curricula found in the literature. As a result of this study, (a) the construct of integrated curricula was shown to be observable and measurable, (b) features of current conceptual models of integrated curricula were shown to have validity in a variety of classrooms, (c) important limitations of the integrated curricula construct were identified, (d) the reliability of teacher reports was assessed, and (e) teachers' assessments of the relevance of the resulting information were explored.

Such implementation information is needed to determine if integrated curricula, a major component of current school-to-work transition initiatives, is, in fact, beneficial for all students. The School-to-Work Opportunities Act, the Perkins Act Amendments and Individuals with Disabilities Education Act Amendments of 1990 have created an opportunity to put in place a comprehensive school-to-work system that creates high academic expectations and promotes positive student outcomes for all students. To achieve this goal, more information is needed by policymakers and practitioners about classroom-level implementation of school-to-work activities and how these activities address the individual educational needs of students with disabilities. This study addressed this need in two important ways: (a) completion of a methodological component of indicator development that is generally not possible for school practitioners and administrators to undertake, and (b) demonstration of the feasibility of using observable classroom practice measures to describe integration of academic and occupational curricula.

APPENDIX A

Coding Definitions

Observation Categories: Instructions and Examples

(Question 1, column 3) **VOCATIONAL CONTENT**

Instructions: Circle the code that best indicates the function of any vocational subject matter addressed during the activity. The vocational content may be secondary to other content covered at the same time. However, the vocational function of the content must be explicitly referenced by the teacher or students or apparent from the materials given to the students.

Examples: Examples are given after a brief definition of each code.

NONE: Occupational information is not presented or referenced during this activity.

*Students are completing an academic assignment, such as reading, reciting geography facts, or solving math problems. The teacher does not discuss how these activities relate to vocational options for the students, nor do the materials used by the students specifically mention a relationship to vocational knowledge or skills. Students do not ask about or discuss the occupational relevance of the material.

GENERAL CAREER AWARENESS: Students are learning about types of industries, job requirements, or exploring personal career interests. The function of the activity is for students to have a broader information base rather than to learn a particular vocational skill.

*Students are writing a report about the educational requirements and typical duties for three different jobs of interest to the student.
*A representative from a local hospital presents information about the variety of job opportunities within the healthcare industry.
*The teacher and students discuss the impact of environmental regulations on local manufacturers.

GENERAL WORK BEHAVIORS: Students learn about or practice social and personal behaviors that contribute to successful participation in a work setting.

*The students roleplay interactions with boss and coworkers.
*The teacher acknowledges that students are demonstrating grooming appropriate for the workplace.
*The students discuss conflict resolution in the workplace.

GENERAL WORK SKILLS: The skill or knowledge being learned is useful in a variety of job types.

*Students are practicing keyboarding.
*Students are developing a business plan for a school-based student-run business.
*The students and teacher discuss job-search strategies.

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*Students complete a variety of job applications and the teacher checks for neatness and accuracy.
*Students practice different strategies for giving oral presentations.
*The teacher shows how to set up a computer database to track inventory.

JOB-SPECIFIC SKILLS: The task is essential to or associated with a particular job within an industry and has limited applicability outside that job type.

*Students are "prepping" food.
*Students are repairing a small motor.
*Students are reading about welding procedures.
*The teacher demonstrates how to cut hair in a particular style.

(Question 1, column 4) **CONTENT BLEND**

Instructions: Circle the code that best indicates whether the activity's content is primarily academic, vocational, or some blend of the two. Consider overt statements made by the teacher and students about the purpose of the activity as well as the function of materials used.

Examples: Examples are given after a brief definition of each code.

ACADEMIC: The purpose of task is to acquire or improve reading, writing, math, science or social studies skills. Students may use vocationally-relevant skills to accomplish the task, but these are not discussed or evaluated by the teacher or students.

*Students are reading about the civil rights movement.
*Students are learning the names of complex geometric figures.
*Students are reporting facts about Tennessee geography.
*The teacher is explaining how to write a term paper.

ACADEMIC, REINFORCE OCCUPATIONAL: The primary instructional focus is the academic task and the use of vocational materials or skills is secondary. A vocational task may be completed or occupational information gained, but this is incidental to learning to exercise academic skills and knowledge. The vocational skill or knowledge may be considered basic or introductory. The teacher or students may suggest that the academic skills being learned are relevant to some occupational area.

*The teacher asks students to practice note-taking in preparation for writing a report on a career of interest to them.
*The students are observing a small chemical reaction, and the teacher describes how these chemicals are used by technicians in a particular industry.
*To explain an economic concept, the teacher uses illustrative information about a well-known business firm.

FUSED ACADEMIC/OCCUPATIONAL: The student is called upon to employ both academic and vocational skills or knowledge. The purpose of the task is equally focused on improving or acquiring academic and occupational knowledge or skills. The academic skills involved are typically more than basic (e.g. academic concepts from college preparatory classes or representative of "higher order thinking").

*Students must plan and prepare a meal for 50 people, including developing a work schedule, adapting recipes designed for smaller numbers, and completing a purchase order.
*The teacher introduces an algebra skill by discussing the use of Ohm's law in the electronics field.
*Students prepare a technical manual that could be used to train new workers.
*The teacher explains the components of a successful business plan and how to present the plan to potential funders.
*Students use biology concepts to investigate plant or livestock production on an existing farm.
*Students report on working conditions in factories during the early part of the century as described in literature of the time.

OCCUPATIONAL, REINFORCE ACADEMIC: The primary focus is the vocational task and the use of academic materials or skills is secondary. An academic task is completed or academic information is gained, but it is incidental to learning occupational skills or knowledge. The academic skills involved may be basic or remedial. The teacher may suggest that the vocational skills being learned make use of certain academic or theoretical concepts, or that certain academic skills have "real-life" importance.

*Students are working with hydraulic lifts and the teacher mentions the physical principles involved.
*Students are developing a resume, and the teacher reminds the students that they will be graded on spelling, clarity and completeness.
*A health care professional describes the educational requirements for different types of nursing degrees, and emphasizes the importance of taking college preparatory science classes.
*Students create a chart showing the major steps of a job task.

OCCUPATIONAL ONLY: The purpose of the task is to acquire or improve occupational skills and knowledge in areas such as agriculture, business, consumer or occupational home economics, industrial arts, marketing, occupational health, technology, or trades and industry. Students may use academic skills to accomplish the task, but these are not discussed or evaluated by the teacher or students.

*Students are practicing completing job applications.
*The teacher describes the skill standards expected for a particular industry.
*Students read about sustainable agriculture.
*Students test an electronic circuit board.

Other Issues: "Basic" academics include demonstrating routine reading or computation skills and the use of fundamental facts or rules to complete math, reading, science, or social studies applications below the college preparatory level.

(Question 1, column 5) INSTRUCTION STRATEGY

Instructions: Circle the code that best indicates how the teacher interacted with students during the activity.

Examples: Examples are given after a brief definition of each code.

MONITOR: The teacher has minimal interaction with students. The teacher's primary objective is supervision or assessment of tasks and behavior.

- *The teacher sits at the desk and grades papers while students complete a test.
- *While students work on a small group assignment, the teacher gives directives, such as "do this" or "don't do that" or "just do your best".
- *The teacher has two groups of students completing alternate activities; he or she monitors one group while interacting with the other.

LECTURE/REVIEW: The teacher gives out information, or the teacher checks student awareness of the "right answer" or specific facts.

- *The teacher stands at the front of the class and tells the students about the kinds of reference books available in the library.
- *The teacher states that the class will review information for a test and then asks questions that require a factual or true/false answer.
- *The teacher shows a video to give another perspective on a particular topic.

LEAD DISCUSSION: The teacher facilitates students' verbal exploration of an issue or challenges students to explain concepts. The teacher expects students to do more than give the "right answer" or brief factual responses. During discussion, the teacher encourages students to explore a question posed by the teacher or other students, and other students may be expected to participate in the exchange.

- *The teacher presents a problem and then asks "how" or "why" questions as several students offer answers.
- *The teacher moderates a student debate regarding the merits of a vocational education.
- *Students present solutions to a homework problem and the teacher asks them to explain how they arrived at the answer.

MODEL/DEMONSTRATE: The teacher (or student under teacher's direction) completes an activity in front of other students and points out the steps involved in completing the activity properly.

*The teacher uses a computerized career guidance information system while students watch. At the same time, the teacher verbalizes the steps the students must use to operate the system and locate the desired information.

*The teacher circulates among students who are making models of geometric figures. If a student is having difficulty constructing the model the teacher shows each student how to use the materials.

*The teacher shows the class how to use different types of car jacks and lifts, and then has several students demonstrate proper use of the equipment while other students watch.

COACH: Coaching is an activity that may involve lecturing, modeling, leading discussion, and questioning. The teacher changes modes frequently to adapt to individual students' activities. If the teacher is coaching, the student usually is producing a written or material product and the teacher is posing questions or suggesting strategies that will guide the student toward completion of the product or problem solution. The teacher is interested in guiding but not completely directing the process. Students may be expected to work without immediate supervision for part of the activity.

*The teacher circulates among students, assisting them to locate the type of reference book that would be most useful for them, asking them questions about their research topic, and discussing possible strategies for presenting information in the report.

*The teacher checks on students' progress on completing a job application; the student isn't sure who to list as a reference and the teacher asks the student to think about who knows the most about the student's previous work experiences; the student names his own parent and a neighbor; the teacher asks the student to think about which of those two people a potential employer would be most interested in talking to and why.

*Two students tell the teacher that they cannot get an alarm to activate. The teacher asks several questions about the alarm circuit, while the students show what they have tried. The teacher reviews the operating logic of the alarm mechanism and suggests the students think about simpler ways to activate the alarm.

Other Issues: ALTERNATE TEACHER: If another instructor leads the activity, consider the alternate person's interactions when coding instruction activity.

If the regular teacher and the alternate teacher are doing similar activities with smaller groups of the class, code this as one activity.

If the regular teacher and the alternate teacher are doing different activities with students, you may code this as two activities or as one activity and one alternate content. This choice will depend on the size of the groups involved, the purpose of the alternate content, and whether all students eventually come into contact with the same material.

(Question 1, column 6) **STUDENT ACTIVITY**

Instructions: Circle the code that best indicates what the students did during this activity. Consider actual student behaviors and teacher instructions regarding expected behavior.

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Examples: Examples are given after a brief definition of each code.

LISTEN/TAKE NOTES/TEST: Students initiate few interactions with the teacher or other students. Students are expected to be quiet or attend to the teacher.

- *Students take notes while listening to a presentation by the teacher.
- *Students take a written test.

DRILLED RESPONSE: Students complete a series of similar exercises or problems that are primarily abstract, symbolic, or factual. The teacher may ask a series of questions and students are expected to provide brief verbal responses - the "right" answer - or to repeat information recently given to them. There is usually no follow-up question to a student response unless a "wrong" answer is given.

- *Students complete a worksheet of math problems.
- *Students review previously completed worksheets with the teacher.
- *Students give an answer in response to a teacher's question, and the teacher says "that's right" or "no" and then proceeds to the next question or to another student.
- *Students recite facts from memory.
- *Students read the text aloud.

DISCUSSION/DISCOVERY: Students give longer responses and explain concepts or issues. The students present their own opinions or share new information. Students ask questions of other students and respond to other students' ideas. The teacher may probe or follow-up student responses to seek more information.

- *Students describe their current work experiences and give examples of how they deal with coworker conflicts.
- *Students compare solutions to a homework problem and negotiate a common solution.
- *Students report on their research about the functions of the Supreme Court in the United States system of government, and pose related questions to other students.
- *Students role play a job interview with another student, and then give each other performance feedback.

LAB OR APPLIED WORK WITH ROUTINE PROBLEMS: (Applied) Students' work is concrete ("hands on") rather than abstract or symbolic. Students use "real-world" materials or deal with problems that would be encountered outside a high school setting. (Routine) The student is given a formula or model to use as a guide to complete the work. The problem-solving method is the same for a series of applied problems, although each problem may be slightly different from previous ones.

- *The student completes each step in a science experiment and documents the outcome.
- *The students use a variety of reference books from the library to locate information for a report; the students transfer the information to note cards in a format suggested by their teacher.

*After being shown how to operate a commercial dishwasher, the student practices the steps involved using the dirty dishes and equipment from a food preparation project completed earlier in the period.
*The student follows the steps in a technical manual to practice using a computerized robot arm for grasping and lifting.

LAB OR APPLIED WORK WITH NOVEL PROBLEMS: (Applied) Students' work is concrete ("hands on") rather than abstract or symbolic. Students use "real-world" materials or deal with problems that would be encountered outside a high school setting. (Novel) Students will have to adapt a previously learned formula or model to solve a problem. Or, the students must decide on the best use of materials to accomplish the work. The problem solving method is different from models given previously, or the type of problem has not been encountered by the students before.

*The teacher indicates that the students must solve a new problem independently.
*The teacher and students enter new information into a computer simulation program on urban planning; whether the outcome will be "successful" is not predetermined by the teacher.
*Students present the results of independent projects.
*Students select a problem of interest to them and document different strategies they might use to solve the problem.

Other Issues: If students have completed work and are allowed to select an alternate activity (e.g., play computer games) and the selected activity is not directly related to the course content, then list the student activity as "alternate content" (Question 2) and code as many categories as possible. Then, write the words "free time" in the left margin next to the "alternate content" boxes.

Worksheets could be classified as listen/take notes, drilled response, or applied work depending on the teacher's directions. For instance, if students use the worksheet to record information being presented at that time by the teacher, this might be "listen/take notes". If the students are filling in the blanks or completing a series of similar problems after receiving information from the teacher, then this might be "drilled response". If the students are completing word problems or writing short answers this might be considered "lab/applied work with routine problems" if the student must use "real world" materials or do "hands on" activities to get an answer.

(Question 1, column 7) INSTRUCTION GROUPING

Instructions: Circle the code that best indicates the grouping the teacher used to organize the activity and instruction.

Examples: Examples are given after a brief definition of each code

WHOLE CLASS: The teacher directs instruction to all students. All students receive the same information. Students may interact with a variety of other class members or only the teacher.

*The teacher is lecturing in front of the class.
*All students are taking a test and the teacher is supervising.
*The teacher asks all the students to watch a demonstration.

SMALL GROUPS: The teacher works with a few students at a time, and students interact with a small number of other students.

*The teacher divides the class into four groups and assigns each group a different research task related to the topic of instruction.
*The teacher instructs the students to get into groups of three and compare their solutions to a problem.

PARTNERS: The teacher works with two students at a time and a student interacts with one other student only.

*The teacher asks the students to work in teams of two to complete a lab experiment.
*The teacher assigns a student who has successfully completed an assignment to assist another student who is still working.

INDIVIDUAL: The teacher provides individual instruction to students and a student has minimal or no task-related interaction with other students.

*Students are working on an independent research project, and the teacher circulates to individual students to respond to questions.
*The teacher works with one student to correct problems on an earlier assignment, while other students watch a video.

Other issues: Grouping that is simply based on the room's physical arrangement (e.g., students sit in small groups because the room has tables instead of desks) or grouping that is for convenience (e.g., working in pairs because there are not enough computers to go around) should probably be coded as "whole class". However, if the teacher groups students to facilitate more individualized instruction or cooperative learning activities, this may be coded as "small groups" or "partners".

Students working independently may not be receiving "individual" instruction. Only choose "individual" if the teacher provides individualized instruction to the majority of the students for the activity.

If a large class is split in two (for instance, to permit the teacher and an aide to work on separate activities with the groups) then describe the instruction grouping as "whole class".

APPENDIX B

Data Collection Instruments

Administrative Course Description

School________________________ Teacher________________________

Course Title____

Semester______________________ Period__________________________

Date (MM/DD/YY)______________

1. Check the category that best describes this course:

___ academic
___ vocational
___ integrated academic/occupational
___ other__________________________

2. If available, attach a course description.

3. Student Enrollment: Do not include a student in more than one of the subcategories under male and female. Some students will not be included in the subcategories.

_____ Total number of students enrolled for this semester	
____ Total number of males	____ Total number of females
____ Limited English Proficiency	____ Limited English Proficiency
____ Low Income	____ Low Income
____ Academically Talented	____ Academically Talented
____ Special Education ___ Learning Disability ___ Mild/Mod. Mental Ret ___ Sev./Prof. Mental Ret. ___ Behavior/Emot. Disorder ___ Health or Sensory Impaired	____ Special Education ___ Learning Disability ___ Mild/Mod. Mental Ret ___ Sev./Prof. Mental Ret. ___ Behavior/Emot. Disorder ___ Health or Sensory Impaired

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Course Questionnaire

School________________________ Teacher Name________________________

Course________________________ Semester________________________

Period________________________ Date (MM/DD/YY)____________________

1. During this semester, approximately what percent of this course's class time will you devote to each of the following types of occupational content?

___ None
___ General Career Awareness
___ General Work Behaviors
___ Acquisition or Application of General Work Skills
___ Acquisition or Application of Specific Job Skills

2. During this semester, approximately what percent of this course's class time will you devote to each of the following types of content?

___ Academic content only
___ Academic content with some reinforcement of occupational learning
___ Fusion of academic and occupational learning
___ Occupational content with some reinforcement of academic learning
___ Occupational content only
___ Other____

3. Compared to other courses in the school, how would you rate the academic content of this course?

1	2	3	4	5
Less Rigorous		Average		More Rigorous

4. Compared to other courses in the school, how would you rate the occupational or technical content of this course?

1	2	3	4	5
Less Rigorous		Average		More Rigorous

5. Is this course part of a sequence of courses? ___yes ___no
If "yes", name the required courses immediately preceding and following.

6. Approximately what percent of students in this course are in the following paths?

___ Academic/College Preparatory
___ Vocational/Technical
___ General
___ Other ____

7. During this semester, approximately what percent of this course's class time will you devote to each of the following types of instructional activities?

___ Monitor
___ Lecture/Review
___ Lead Discussion
___ Model/Demonstrate
___ Coach Individuals or Groups
___ Other____

8. During this semester, approximately what percent of this course's class time will you expect students to engage in each of the following?

___ Listen/Take Notes/Tests
___ Drilled Response
___ Discussion/Discovery Activities
___ Lab or Applied Work with Routine Problems
___ Lab or Applied Work with Novel Problems
___ Other____

9. During this semester, approximately what percent of this course's class time will you instruct students:

___ As a whole class
___ In small groups
___ As partners (2 students)
___ As individuals

10. The administration of this school identified this class as an "academic"* course.
Do you agree with this description? ___ yes ___ no

If you answered "no", briefly explain why you disagree.

*Class type replaced with vocational, integrated academic/occupational or special education to match administrative designation

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11. Teacher Educational Background:

Degree(s)__________ in ____

__________ in ____

__________ in ____

12. Current Professional Certification:

____

____

13. Professional Teaching Experience:

Years at elementary level______________

Years at secondary level______________

Years at postsecondary level___________

Total years teaching experience________________

Years teaching at this school________________

Years teaching this course________________

Years teaching in subject area______________

14. Education administration experience:

Position:____ Years:__________

Position:____ Years:__________

15. Other experience in education field:_______________________________________

____

16. Professional/business experience outside education field:

Field:_____________________Position:_____________________ Years:______

Field:_____________________Position:_____________________ Years:______

Field:_____________________Position:_____________________ Years:______

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Daily Log

School______________________ Teacher's Name__________________________
Course______________________ Period_______ Date _______________________

1. Describe the content taught/studied by the majority of the class.

Brief Description :Topic and Activity	Classtime Emphasis	Vocational Content	Content Blend	Instruction Strategy	Student Activity	Instruction Grouping
	25% 33% 50% 66% 75% 100%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals
	25% 33% 50% 66% 75%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals
	25% 33% 50% 66% 75%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals
	25% 33% 50% 66% 75%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals

TOTAL 100%

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2. How many minutes of classtime were spent on activities not directly related to learning this course's content? ___ < 5 minutes ___ > 5 minutes*

*If more than 5 minutes of classtime were spent on activities not directly related to the course content because of some unusual incident, you may want to note this on the weekly log.

3. Were any students given alternate content? ___ no ___ yes

Reason for alternate assignment____

Complete this table to show any alternate content given.

Brief Description: Topic, Activity: #STUDENTS	Classtime Emphasis	Vocational Content	Content Blend	Instruction Strategy	Student Activity	Instruction Grouping
	25% 33% 50% 66% 75% 100%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work- Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals
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	25% 33% 50% 66% 75%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work- Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals

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Weekly Log

School__________________________ Teacher Name__________________________

Course__________________________ Date (MM/DD/YY)_______________________

Period__________________________ Week #___1 ___2 ___3

1. Was it difficult to use the coding scheme for any of the activities you described on the daily logs this week? ___no ___yes

   If yes, identify the day and activity, then briefly describe the difficulty.

2. Did the class engage in any special activities this week that were not adequately described in the daily logs? ___ no ___ yes

   If yes, briefly describe the activity, purpose and amount of time involved.

3. Were there any unusual incidents that significantly altered your intended lessons this week? ___no ___yes

   If yes, briefly describe the incident(s) and day.

4. Do you have any questions regarding the study? ___no ___yes

   If yes, please write the question.

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Observer Log

School____________________ Teacher's Name________________________

Course____________________ Period_______ Date _____________________

Observer Name:

Brief Description :Topic and Activity	Classtime Emphasis	Vocational Content	Content Blend	Instruction Strategy	Student Activity	Instruction Grouping
	25% 33% 50% 66% 75% 100%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals
	25% 33% 50% 66% 75%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals
	25% 33% 50% 66% 75%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals
	25% 33% 50% 66% 75%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals

TOTAL 100%

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2 Were any students given alternate content? ___ no ___ yes

Complete this table to show any alternate content given.

Brief Description: Topic, Activity # STUDENTS	Classtime Emphasis	Vocational Content	Content Blend	Instruction Strategy	Student Activity	Instruction Grouping
	25% 33% 50% 66% 75% 100%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals
	25% 33% 50% 66% 75%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals
	25% 33% 50% 66% 75%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals
	25% 33% 50% 66% 75%	None General Career Awareness General Work Behaviors General Work Skills Job-specific Skills	Academic Only Academic, reinforce occupational Fused academic/ occupational Occupational reinforce academic Occupational Only	Monitor Lecture/ Review Lead Discussion Model/ Demonstrate Coach	Listen/ Take Notes/ Test Drilled Response Discussion/ Discovery Lab/Applied Work-Routine Lab/Applied Work - Novel	Whole Class Small Groups Partners Individuals

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Observer: Teacher: Date:

3. Time class began:__________ Ended:___________ Total class time:________mins.

4. Number of students present for majority of classtime:___________
Number of instructors and aides present for majority of classtime:________

5. Identify the setting in which most class activities took place:
___ classroom
___ other on-campus area____

6. How many minutes of classtime were spent on activities not directly related to learning this course's content? ___ < 5 minutes ___ > 5 minutes

7. Describe any unusual incidents/time off content/interesting issues that occurred in the class:

Follow-up Survey

Collecting Classroom Information: *Course Questionnaire, Daily Logs, and Observations*

DIRECTIONS: Circle ONE answer for each question. Write comments on the back of this page.

1. Completing the 3-page course questionnaire at the beginning of the project took:

1	2	3	4
10 mins. or less	*11-20 mins.*	*21-30 mins.*	*more than 30 mins.*

2. Completing a single daily log (i.e., for one day's activities in one class) usually took:

1	2	3	4
5 mins. or less	*6 - 10 mins.*	*11-14 mins.*	*more than 15 mins.*

3. The format of the daily logs made documenting classroom activities:

1	2	3	4
very easy	*fairly easy*	*a little difficult*	*very difficult*

4. How confident were you about choosing among the codes in each category on the daily log to describe classroom activities?

1	2	3	4
very confident	*fairly confident*	*a little unsure*	*very unsure*

5. How disruptive was the presence of project observers in your classroom?

1	2	3	4
not at all disruptive	*a little disruptive*	*fairly disruptive*	*very disruptive*

6. Having observers in the classroom influenced the way I documented and coded activities on the daily log:

1	2	3	4
not at all	*a little*	*some*	*a lot*

[OVER]

Comments about the course questionnaire:

Comments about the daily logs:

Comments about observers or classroom observations:

Reporting Classroom Information: *Your Class and Overall Project Results*

DIRECTIONS: Review the enclosed summary information.
Then, circle ONE answer for each question below.

1. **How well do you think the summary information about YOUR class activities represents activities that occurred in your class during the three weeks of the project?**

1	2	3	4
very well	*fairly well*	*only a little*	*not at all*

Comments:

2. **How well do you think the summary information about YOUR class activities reflects the types of activities that occur in your class during the entire semester?**

1	2	3	4
very well	*fairly well*	*only a little*	*not at all*

Comments:

3. **According to the teachers' daily logs, integrated curricula and vocational classes were more likely to offer general types of vocational content (awareness, behaviors, skills) than academic or special education classes. (However, this difference was not statistically significant.) Do you think these results accurately represent an important difference in the types of vocational content in the different classes?**

1	2	3
yes	*no*	*not sure*

Comments:

[OVER]

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4. **According to the teachers' daily logs, integrated curricula and vocational classes were more likely to blend (reinforce or fuse) vocational and academic content than academic or special education classes. (Also, this difference was statistically significant.) Do you think these results accurately represent an important difference in the content blend of the different classes?**

1	2	3
yes	*no*	*not sure*

Comments:

5. **According to the teachers' daily logs, there was no difference in the amount of time teachers used coaching as an instruction strategy. Do you think this accurately represents an important way that the classes are alike?**

1	2	3
yes	*no*	*not sure*

Comments:

6. **According the teachers's daily logs, students in vocational classes spent significantly more time engaged in applied/lab activities than those in all other classes. Students in integrated curricula and special education classes also were more likely to engage in lab/applied activities than students in academic classes (although this difference was not statistically significant). Do you think these results accurately represent an important difference between types of classes?**

1	2	3
yes	*no*	*not sure*

Comments:

7. **According to the teachers' daily logs, special education teachers were least likely to use small groups/partners for instructional activities. (This difference was statistically significant.) Teachers in integrated classes were most likely to group students this way (although this difference was not significant.) Do you think these results accurately represent an important difference between types of classes?**

1	2	3
yes	*no*	*not sure*

Comments:

8. **According to the teachers' daily logs, special education academic classes spent more classtime on content other than vocational or academic (e.g., personal lifeskills). Do you think these results accurately represent an important difference between types of classes?**

1	2	3
yes	*no*	*not sure*

Comments:

9. **Having this kind of summary information about classroom activities might be useful for:(CHECK ALL THAT APPLY)**

_____ describing some aspects of how I use classtime to other teachers

_____ describing some aspects of how I use classtime to school administrators

_____ describing some curricular and instructional differences between types of classes in my school

_____ monitoring some aspects of how I use classtime to inform my personal professional development

_____ monitoring some aspects of how I use classtime to inform a school-wide assessment of classroom activities

_____ monitoring some aspects of how curricula and instruction are implemented in my school

_____ other____

_____ none of the above

[OVER]

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Other comments about the summary information for YOUR class:

Other comments about the summary information for ALL classes:

APPENDIX C

Teacher Manual

(Excluding Coding Definitions)

Teachers' Observation Manual

Observing Academic and Occupational Curricula in Secondary Classrooms

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Purpose of the Project

This project is a structured observational study. The purpose of the project is to test whether the project's classroom observation system generates valid descriptions of curricula and instruction. There are several questions that we will try to answer by doing the study. For instance:

1. Will the measures of curricula and instruction used in the observation system distinguish between three types of classes: 1) academic, 2) vocational, and 3) those that blend both academic and vocational content?

2. Are teacher-completed daily logs a useful way to collect information about what happens in classrooms? Are one-time course surveys or observers' logs better methods?

3. Is the observation system useful for describing both regular and special education classroom activities?

4. Is the information generated from the observation system meaningful and useful for teachers, administrators, or researchers?

If the observation system is shown to be meaningful and useful, then teachers, administrators, and researchers could use it to:

1. describe important classroom activities in simple, observable terms,
2. assess the types of curricula and instruction used in a variety of classes, and
3. evaluate whether different types of curriculum and instruction are associated with student achievement and success.

Participating Teachers' Role

Teachers are the primary data collectors in this project. The observation system we will use is designed for teachers to describe in a simple way some important aspects of high school classes. The information teachers record on the daily logs will be used in several ways to assess the observation system's usefulness.

As a participating teacher, your major responsibilities are as follows.

1. Meet with the project director individually (or with a small group) for approximately one hour to receive and review the project materials. Practice coding some classroom activities.

2. Complete a brief questionnaire about the class(es) to be observed and yourself. This should take about 15 minutes and is done just once.

3. Complete a daily log for each observed class for 3 weeks (15 consecutive school days). Each log can be completed in about 5 minutes.

4. During the same 3 weeks, complete one weekly log each week. This form can be updated daily and at the end of each week. Each weekly log will take about 15 minutes total to complete.

5. Allow an observer to visit your class 4 or 5 times total during the 3 week study. The observer will use an observation log similar to the teachers' daily log to record information about curriculum and instruction.

6. OPTIONAL: After the project has been completed, you will receive summary information about your observed class(es) as well as general project results. You also will be given a brief follow-up survey about the observation system data collection methods and results.

General Procedures

During this project we will observe forty academic, vocational, and integrated academic/vocational classes serving students with and without disabilities in two local high schools involved in the High Schools that Work initiative. We will document normal classroom practices across five categories of curriculum and instruction:

1. vocational content,
2. content blend,
3. instruction strategy,
4. student activity, and
5. instruction grouping.

University project staff and school administrators will complete brief course descriptions and document student enrollment information (e.g., numbers of males/females, number of students receiving special education services). Research assistants (observers) will be trained to complete observation logs. The observers will visit each participating teacher's class(es) at least three times and as many as five times during the three week data collection period.

Participating teachers will receive training from the project director and will complete one course questionnaire, fifteen daily logs, and three weekly logs over the three week data collection period. Following completion of the project, teachers will receive information about the project results. Teachers will be invited to respond to a follow-up survey about the project's data collection methods and results.

A calendar showing the timeline for teacher activities follows this page.

Course Questionnaire

The course questionnaire is to be completed independently by participating teachers after meeting with the project director to learn about the coding categories. You should be familiar with the coding categories before answering the questions on the course questionnaire. You may want to complete some practice daily logs before completing the questionnaire. However, you should return the completed course questionnaire to the project director before starting to formally record information on the fifteen daily logs.

When considering your answers on the course questionnaire for items about the course's content and instruction, use the same definitions that were discussed during the meeting with the project director and that will be used on the daily logs. Examples of the categories and codes are given in this manual in the Daily Log section.

NOTE: Questions 1, 2, 6 - 9 should each total 100%.

The final page of the Course Questionnaire asks for information about your background and professional experience. When you are asked to list "years" involved in some professional experience on this form, give the total number of years rather than the actual dates (e.g., write "4", not "1975-1979").

Daily Log

Complete each daily log as soon as possible after the observed class. You are more likely to accurately describe the class activities if you record your observations immediately after the class. It is important that you only record information about what actually happened during the class. Activities that were planned, but did not occur should not be listed on the daily log.

Completed logs should be turned in on a daily basis to____________________

The following sections will provide information on how to complete the daily logs. We have tried to give examples that will guide you in describing the activities in your classroom. We realize that classroom activities are complex and that the categories you have been given to describe those activities may seem overly broad or simple. Keep in mind that the daily logs are meant to record only some of the information about what happens in your class, and one of the project's purposes is to find out how well the observation system works.

The examples given in this manual are not all inclusive, and you will need to use your professional judgement about the function of some activities in order to complete the logs. If you are unsure how to describe a particular activity, review the examples in the manual, and then try to document the activity on the daily log using the given categories and codes.

After reviewing the examples, if you cannot decide between two codes within a category, you may circle your first choice, and then put a diagonal slash through your second choice. Then, make a note or ask a question about that activity on the weekly log.

If you think an activity cannot be described using a particular category, first write the brief activity/topic description in the first column, and assign a classtime emphasis code. Then code as many categories as you can. Put a large "X" through the category you are unable to code, and make a note about this on the weekly log.

Observation Categories: Instructions and Examples

(Question 1, first column) ACTIVITY/TOPIC

Instructions: In a few words, describe each course-related activity that occurred in today's class and, in which, the majority of the class was engaged. In the space provided, note two things for each activity: 1) the general nature of the activity and 2) the main topic or content area. Put one activity in each space. Only list activities that are related to the course subject matter. If some students engaged in alternate course-related activities, refer to the section below on "Alternate Content".

Examples: One way to think about what to write is to decide what the title of the lesson plan for this activity might be. You do not need to be highly specific. For instance, do not give student performance objectives. However, do not use overly broad terms such as "math" or "job skills". Try to identify the main theme or content area within your subject area. Some examples are:

"Conducting small-scale lab on ionic compounds"
"Updating work-experience portfolios"
"Reviewing Tennessee geography"
"Watching a video about VICA membership"
"Demonstrating proofs involving congruent angles"
"Practicing clerical tasks (alphabetizing, filing, stamping)"

Other Issues: Typically, a single activity takes at least 25% of the classtime, but this is not always the case. If an activity is very brief, you must consider whether it is actually a separate activity. For instance, if you give a brief review of previous class activities as an introduction to a new activity, you should probably consider the review as part of the new activity. However, if you spend 10 minutes reviewing a chapter in preparation for a test, and then switch to a lecture on another topic, you should list the review and the lecture as two separate activities. If you can not decide whether an activity should be listed separately, it is best to list the activity as if it were separate.

If students are engaged in multiple or rotating activities (e.g., different work stations with slightly different content), but each activity would be coded in the same way, then give a general topic heading with each activity listed underneath, and circle the appropriate codes just once next to the general topic.

If students in the class are engaged in more than 4 activities and each activity would be coded differently, select 4 activities that best represent the range of activities experienced by the majority of the class. Then write the words "more than four" in the left margin of the Daily Log form. List any remaining activities as "Alternate Content" on the back of the form.

If the class is interrupted for several minutes, or you must attend to matters other than course-related material, make a brief note about this on the weekly log and put a check mark on the daily log (Question 2) indicating that you spent more than 5 minutes on an activity that was not course-related. Do not list activities that are not course-related on the Daily Log.

(Question 1, column 2) **CLASSTIME EMPHASIS**

Instructions: Circle the number that is closest to the percentage of classtime spent on this activity on this day. If you prefer, you may write in an amount other than those listed. However, total classtime for all activities listed for Question 1 should not exceed 100%.

Examples: If the students worked on a single activity for the entire class period, you would circle "100%" under classtime emphasis. If students worked on two different activities in 60 minutes - the first activity taking 20 minutes and the second activity taking 40 minutes - you would circle "33%" for the first activity and "66%" for the second activity.

Other Issues: Usually, the total classtime emphasis for activities listed in Question 1 should be 100% and should never exceed 100%.

However, if you lose more than 25% of your classtime because of some disruption, you should indicate this in three ways. First, the total classtime emphasis will be less than 100%, reflecting the amount of time lost (e.g., total of 75% if you lost 25%). Second, indicate in response to Question 2 that more than 5 minutes were spent on activities unrelated to the course and, third, make a related notation on the weekly log.

If you have a shorter disruption (for instance, one that lasts only 10 minutes), you can still calculate your total classtime based on portions of 100% and simply indicate that the disruption occurred in Question 2 and on the weekly log.

Time off content of less than 5 minutes will not be reflected in your total classtime emphasis or on the weekly log.

Total classtime emphasis for "Alternate Content" (Question 3) may be less than 100%.

(Question 2) **TIME OFF CONTENT**

Instructions: Put an "X" next to the amount of time that is the best estimate of time spent during this class on other than course-related activities. If the class is off content for more than 5 minutes, include a brief explanation on the weekly log.

Examples: Behavior management problems that stop the teacher from interacting with other students. Dealing with interruptions from outside class. Processing several tardy slips. Listening to intercom announcements. Fire drills. Students have finished assignments and are waiting to leave.

Other issues: If 1/2 or more of the class is disengaged (waiting to leave or between activities) for more than 5 minutes, consider this as time off content even if other students continue to work. Make a note about this on the weekly log.

(Question 3) **ALTERNATE CONTENT**

Instructions: Use this section to identify course-related classroom activities in which only some of your students took part. These may be activities that are not central to the day's lesson, but must be completed by a particular student to fulfill course requirements. Describe the topic and activity in the same manner as you would for activities listed in Question 1.

Examples: A student takes a make-up test during class because of an earlier absence, while the other students work on the regular assignment. The test-taking is listed as an alternate topic activity in the table under Question 3 and the regular assignment is listed in the table under Question 1.

Another example would be a class with students who regularly work on different activities. In this case, list the activity assigned to the larger group of students in the table for Question 1. List the activity being done by the smaller group of students as alternate content in the table for Question 3.

Also, if a teacher holds individual teacher-student conferences regarding grades or assignments, include this under alternate content.

Other Issues: The total classtime emphasis for "Alternate Content" may not add to 100% if a student or group of students worked for less than the entire class period on the alternate actitivity. It will total 100% only if a student or group of students was engaged in alternate content for the entire class period.

Weekly Log

Make notes as needed on the weekly log throughout the week and then finish the log at the end of the week. The purpose of the weekly log is to:

1. identify classroom activities that are not easily described with the observation system;
2. identify features of classroom activities that may be important, but are not adequately described by the observation system;
3. identify any unusual incidents or periods of time off content that may have changed the class' typical content and instruction; and
4. provide another way for teachers to ask questions about the project.

Even if you answer each question with "no", submit the completed weekly log.

Weekly logs should be given to________________________________.

APPENDIX D

Observer Manual

(Excluding Coding Definitions)

Observation Manual

Observing Academic and Occupational Curricula in Secondary Classrooms

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Purpose of the Project

This project is a structured observational study. The purpose of the project is to test whether the project's classroom observation system generates valid descriptions of curricula and instruction. There are several questions that we will try to answer by doing the study. For instance:

1. Will the measures of curricula and instruction used in the observation system distinguish between three types of classes: 1) academic, 2) vocational, and 3) those that blend both academic and vocational content?

2. Are teacher-completed daily logs a useful way to collect information about what happens in classrooms? Are one-time course surveys or observers' logs better methods?

3. Is the observation system useful for describing both regular and special education classroom activities?

4. Is the information generated from the observation system meaningful and useful for teachers, administrators, or researchers?

If the observation system is shown to be meaningful and useful, then teachers, administrators, and researchers could use it to:

1. describe important classroom activities in simple, observable terms,
2. assess the types of curricula and instruction used in a variety of classes, and
3. evaluate whether different types of curriculum and instruction are associated with student achievement and success.

Observers' Role

The primary responsibility of the observers is to document classroom activities in a complete and consistent manner throughout the study. The observers' documentation will be used to assess the reliability of teachers' descriptions of curricula and instruction. The information recorded by teachers and observers will be used in several ways to assess the observation system's usefulness.

As an observer (research assistant), your duties include:

1. Meet with the project director and other research assistants to review the project's purpose and materials.

2. Become familiar with the coding system as presented in the observation manual and in training sessions with the project director. Practice coding classroom activities until you achieve interrater reliability of 90% minimum with the project director and other observers.

3. Complete a set of observation notes and an observer log for each assigned class. Submit these documents on a timely and regular basis as requested by the project director.

4. Meet weekly with the project director and other research assistants to review coding issues and to practice coding classroom activities in order to maintain high interrater reliability.

5. Maintain accurate mileage and work logs.

General Procedures

During this project we will observe forty academic, vocational, and integrated academic/vocational classes serving students with and without disabilities in two local high schools involved in the High Schools that Work initiative. We will document normal classroom practices across five categories of curriculum and instruction:

1. vocational content,
2. content blend,
3. instruction strategy,
4. student activity, and
5. instruction grouping.

University project staff and school administrators will complete brief course descriptions and document student enrollment information (e.g., numbers of males/females, number of students receiving special education services). Research assistants (observers) will be trained to complete observation logs. The observers will visit each participating teacher's class(es) at least three times and as many as five times during the six week data collection period.

Participating teachers will receive training from the project director and will complete one course questionnaire, fifteen daily logs, and three weekly logs over the three week data collection period. Following completion of the project, teachers will receive information about the project results. Teachers will be invited to respond to a follow-up survey about the project's data collection methods and results.

Observer Notes

During each observation you are to make a condensed account of classroom activities as they occur. Use the preprinted "classroom observation notes" sheets to record your notes. These notes should consist of legible words, phrases, or sentences that reflect observable activity in the classroom. These notes do not need to be a smooth, complete narrative. However, the notes should provide enough information to help you select (and justify) a code for each category of interest. Important contextual details that you must record for each activity are listed on the observation notes sheets.

Attach your classroom observation notes to the completed observation log.

General Instructions for Observations:

Be as unobtrusive as possible.

Arrive at the classroom before the final class bell and stay in the classroom until the class dismissal bell.

Upon arrival, briefly identify yourself to the teacher. Choose a seat that is on the side or in back of the classroom, but sit close enough that you can see the materials being used by the students.

You should have few, if any, interactions with the teachers and students. Any interactions that do occur should be respectful and non-judgmental.

If the teacher or students are moving around the room during the class, you may move around also as long as this does not disrupt the activity. Sometimes you will want to move around the room to see the different types of activities going on or to examine materials more closely.

You may look at materials given to students by the teacher or ask students about their assignment if this will help you identify the content. However, this should not interrupt the teacher's or students' activity.

If some students leave the class to complete a course-related activity in another area of the school, you may follow them, make notes about their activity, and then return to the place where most of the students are working.

If you cannot see an activity or cannot follow students who have left the room, make as many notes as you can about the activity and why you could not observe it.

Observer Log

Complete each observer log as soon as possible after the observed class. You are more likely to accurately describe the class activities if you code your observations immediately after the class. It is important that you only record information about what actually happened during the class. Activities that were planned, but did not occur should not be listed on the log. Completed logs should be turned in on a daily basis to the project director.

The following sections will provide information on how to code activities using the observer logs. Become familiar with the categories and coding examples given in this manual. **Your most important job is to be thorough and consistent when coding.** The classroom activities you will observe are complex, and the categories you will use to describe those activities may seem overly broad or simple. Keep in mind that the observer logs are meant to record information about only a few aspects of the classroom activities. You do not need to document everything that happens, but you must document the categories of interest carefully.

The examples given in this manual are not all inclusive, and you will need to use your judgement about the function of some activities in order to complete the logs. If you are unsure how to describe a particular activity, review the examples in the manual, and then try to document the activity on the log using the given categories and codes.

After reviewing the examples, if you cannot decide between two codes within a category, circle your first choice, and then put a diagonal slash through your second choice. Then, document the nature of the coding problem on the observation note sheets.

If you think an activity cannot be described using a particular category, first write the brief activity/topic description in the first column, and assign a classtime emphasis code. Then code as many categories as you can. Put a large "X" through the category you are unable to code, and make a note about this on the observation note sheets.

Observation Categories: Instructions and Examples

(Question 1, column 1) ACTIVITY/TOPIC

Instructions: In a few words, describe each course-related activity that occurred in today's class and, in which, the majority of the class was engaged. In the space provided, note two things for each activity: 1) the general nature of the activity and 2) the main topic or content area. Put one activity in each space. Only list activities that are related to the course subject matter. If some students engaged in alternate course-related activities, refer to the section below on "Alternate Content".

Examples: One way to think about what to write is to decide what the title of the lesson plan for this activity might be. You do not need to be highly specific. For instance, do not give student performance objectives. However, do not use overly broad terms such as "math" or "job skills". Try to identify the main theme or content area within your subject area. Some examples are:

"Conducting small-scale lab on ionic compounds"
"Updating work-experience portfolios"
"Reviewing Tennessee geography"
"Watching a video about VICA membership"

"Demonstrating proofs involving congruent angles"

"Practicing clerical tasks (alphabetizing, filing, stamping)"

Other Issues. Typically, a single activity takes at least 25% of the classtime, but this is not always the case. If an activity is very brief, you must consider whether it is actually a separate activity. For instance, if the teacher gave a brief review of previous class activities as an introduction to a new activity, you should probably consider the review as part of the new activity. However, if the teacher spent 10 minutes reviewing a chapter in preparation for a test, and then switched to a lecture on another topic, you should list the review and the lecture as two separate activities. If you can not decide whether an activity should be listed separately, it is best to list the activity as if it were separate.

If students are engaged in multiple or rotating activities (e.g., different work stations with slightly different content), but each activity would be coded in the same way, then give a general topic heading with each activity listed underneath, and circle the appropriate codes just once next to the general topic.

If students in the class are engaged in more than 4 activities and each activity would be coded differently, select 4 activities that best represent the range of activities experienced by the majority of the class. Then write the words "more than four" in the left margin of the log. List any remaining activities as "Alternate Content" on the back of the form.

If the class is interrupted for several minutes, or the teacher must attend to matters other than course-related material, make a brief note and put a check mark on the log for Questions 6-7 indicating that the teacher spent more than 5 minutes on an activity that was not course-related. Do not list activities that are not course-related on the observer log.

(Question 1, column 2) **CLASSTIME EMPHASIS**

Instructions: Circle the number that is closest to the percentage of classtime spent on this activity on this day. If you prefer, you may write in an amount other than those listed. However, total classtime for all activities listed for Question 1 should not exceed 100%.

Examples: If the students worked on a single activity for the entire class period, you would circle "100%" under classtime emphasis. If students worked on two different activities in 60 minutes - the first activity taking 20 minutes and the second activity taking 40 minutes - you would circle "33%" for the first activity and "66%" for the second activity.

Other Issues: Usually, the total classtime emphasis for activities listed in Question 1 should be 100% and should never exceed 100%.

However, if the teacher lost more than 25% of classtime because of some disruption, you should indicate this in three ways. First, the total classtime emphasis will be less than 100%, reflecting the amount of time lost (e.g., total of 75% if time off content was 25%). Second, in response to Question 6 indicate that more than 5 minutes were spent on activities unrelated to the course. Third, make a related notation in response to Question 7. The incident or disruption will be documented on the observation note sheets as well.

If a shorter disruption occurs (for instance, one that lasts 10 minutes), you can still calculate the total classtime based on portions of 100%. However, indicate that the disruption occurred in your responses to Questions 6-7.

Time off content of less than 5 minutes will not be reflected in the total classtime emphasis or in Questions 6-7.

Total classtime emphasis for "alternate content" (Question 2) may be less than 100%.

(Question 2) **ALTERNATE CONTENT**

Instructions: Use this section to identify course-related classroom activities in which only some students took part. These may be activities that are not central to the day's lesson, but must be completed by a particular student to fulfill course requirements. Describe the topic and activity in the same manner as you would for activities listed in Question 1.

Examples: A student takes a make-up test during class because of an earlier absence, while the other students work on the regular assignment. The test-taking is listed as an alternate topic/activity in the table under Question 2 and the regular assignment is listed in the table under Question 1.

Another example would be a class with students who regularly work on different activities. In this case, list the activity assigned to the larger group of students in the table for Question 1. List the activity being done by the smaller group of students as alternate content in the table for Question 3.

Also, if a teacher holds individual teacher-student conferences regarding grades or assignments, include this under alternate content.

(Questions 3-5) **CLASS LENGTH, PEOPLE, PLACE**

Complete Questions 3-5 based on information in your observation notes.

(Question 6-7) **TIME OFF CONTENT**

Instructions: Put an "X" next to the amount of time that is the best estimate of time spent during this class on other than course-related activities. If the class is off content for more than 5 minutes, include a brief explanation under Question 7. Also use your response to Question 7 to highlight any other interesting or unusual contextual information from your observer notes.

Examples: Behavior management problems that stop the teacher from interacting with other students. Dealing with interruptions from outside class. Processing several tardy slips. Listening to intercom announcements. Fire drills. Students have finished assignments and are waiting to leave.

Other issues: If 1/2 or more of the class is disengaged (waiting to leave or between activities) for more than 5 minutes, consider this as time off content even if other students continue to work.

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